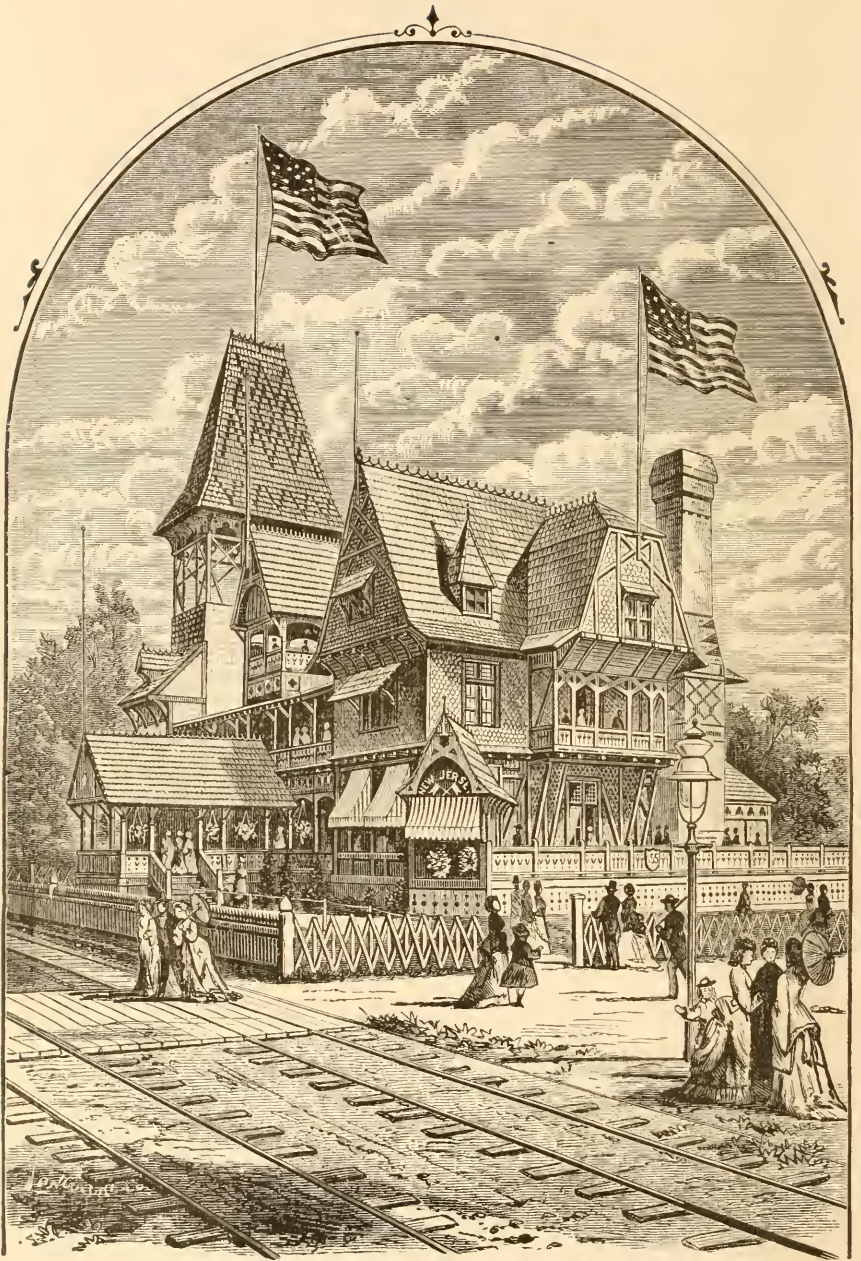


Digitized by the Internet Archive
in 2010 with funding from
Lyrasis Members and Sloan Foundation



NEW JERSEY BUILDING.

New Jersey, State centennial board

REPORT

OF THE

NEW JERSEY COMMISSIONERS

ON THE

CENTENNIAL EXHIBITION.

PRINTED BY AUTHORITY.



TRENTON, N. J.:
NAAR, DAY & NAAR, PRINTERS.
1877.

N. J.
F139
.N5
1876
c.1



NEW JERSEY STATE COMMISSION.

EDWARD BETTLE,	1st Congressional District.
SAMUEL C. BROWN,	2d " "
HENRY L. JANEWAY,	3d " "
JOHN T. BIRD,	4th " "
THOMAS N. DALE,	5th " "
SANFORD B. HUNT,	6th " "
NATHAN W. CONDUCT, JR.,	7th " "
ORESTES CLEVELAND,	} National Commissioners.
JOHN G. STEVENS,	

SAM'L C. BROWN, *President.*

P. T. QUINN, *Secretary.*

PREFACE.

The Centennial Exhibition was not only the great event of the century in its relations to every material interest of the country, but it was an impressive and appropriate commemoration of a historic event, which the American people, in an especial sense, are accustomed to regard as the most important in the world's history.

Our own State of New Jersey was conspicuous in exploits of valor and patriotism in the permanent establishment of our national independence, and she has been scarcely less identified with, and instrumental in rendering the celebration of its one hundredth anniversary a crowning success.

That the exhibition feature of the occasion was a thoughtful device cannot be gainsayed, and while other nations united with us in this notable commemorative exhibition, with great credit to themselves, our own people have special cause for thankful gratulation for the surpassing excellence and impressive significance of the American department.

International Exhibitions have well nigh become necessities, and will no doubt often be repeated by leading nations. Where held, they have always awakened a good degree of national ambition, and a laudable desire to excel all preceding efforts. The American population was not exempt from this spirit of emulation, which was illustrated not only in the vigorous preparation of a comprehensive national display of their resources and products, but in their personal devotion to the exhibition through the entire season.

The total attendance of 9,910,966, (exceeding that of any preceding exhibition,) in the face of unusual depression of

business interests, sufficiently indicates the widespread interest in our own country in behalf of the event celebrated, as well as the peculiar fitness of the mode adopted.

Our State, having been prominent in originating the scheme of *State buildings* upon Centennial grounds, the first thought of the State Commissioners was to avail themselves in the New Jersey structure of the rare opportunity thus presented, to exhibit the great variety and quality of her native building materials, and the first design of the architect was prepared with that in view. It was a very elaborate design, and well calculated effectively to display in the elevation all the variety of stone and brick produced in this State, the interior finish to embrace likewise the woods. Had this plan been carried out, the structure would have been so appropriate and ornamental that the citizens of New Jersey would have been glad for it to remain a permanent legacy to Fairmount Park, as an illustration of the State's liberality, and her resources in the line of building materials. The Commissioners, however, found that the time for erecting such a substantial building was too short, and that the funds in hand would not justify the endeavor to proceed with the plan. Several brick and stone dealers in the State manifested a liberal disposition to further the project, and there is no doubt that large donations of materials would have been proffered, had the Board shown a disposition to go on with their original plan. It was, however, abandoned, and a plan for a frame structure substituted by the same architect.

It is due to Messrs. A. Hall & Son, of Perth Amboy, to say that they urgently favored, and contemplated assistance in the erection of the brick and stone edifice, and when it was determined to change the character of the building, they were unwilling to forego an exhibition of their brick in some form, and upon a liberal scale. They therefore directed the commissioner's architect, Carl Pfeiffer, of New York, to draw a plan for a chimney that would enable them

to exhibit every variety of fancy brick they made, and whatever the cost should be, they would relieve the commissioners of it.

In this connection it is deemed proper to refer to Messrs. A. Hance & Son, of Red Bank, who volunteered to decorate the grounds and State building with ornamental trees, vines, and flowering plants, without compensation from the State Commissioners. The commissioners, and, we have no hesitation in saying, all who visited the building, bore continuous testimony to the graceful beauty of these floral and evergreen decorations. Their personal supervision and frequent renewal of the plants through the summer, gave additional value to their services.

It only remains to say, in behalf of these two firms, that the Hall and Hance donations constituted accessions to the New Jersey Centennial building, which were highly appreciated by the people of the State, and denoted a high order of public spirit and liberality.

It is believed that the accompanying companion maps, early and modern, will be regarded as extremely appropriate adjuncts to this Centennial Report. The first, as an authentic reproduction of early geographical boundaries, and the second, prepared expressly for this work, as the most comprehensive and accurate map of this State that has ever been printed. The exterior outlines of the State remain practically in accord with the early map. It will be an interesting study, in the comparison of the two, to trace the interior changes that have occurred within the century.

The State Commissioners have endeavored to set forth in this, their final report to the Governor, a truthful and comprehensive record of their actions as the representatives of the State and her interests at the Exhibition, and embody therein, with considerable particularity, descriptions of the State's collective exhibits, and those of individual residents of the State as well.

REPORT OF STATE CENTENNIAL BOARD.

To His Excellency Joseph D. Bedle :

The Commissioners you appointed two years ago for service at the Centennial Exhibition in the interest of our State at large, have the honor to make their final report.

Before entering upon the more important subjects of the report, many readers will be interested, perhaps, in some detailed reference to precedent Fairs and Exhibitions.

Industrial Exhibitions are modern institutions; and for two or three generations the world over, have been very generally resorted to as a means to promote the development of every sort of productive industry.

But Fairs have an earlier origin. Both in England and France they were in vogue nearly a thousand years ago. In Germany and Holland they are still very common, and occasions of great interest to travelers desirous of seeing holiday festivities, national costumes, manners, &c., characteristic of those countries. Minor articles of merchandise and wares are displayed in great profusion for sale at these peculiar annual festivals. As facilities for intercourse among nations increased, and the interchange of their products was more easily accomplished, there seemed to be a necessity for the merchants and manufacturers to establish commercial relations upon a higher plane and a more extensive scale; and this led to what was called *Industrial Exhibitions*, the first of which was held in France about the year 1800, and regular triennial exhibitions have been held continuously in that country up to the present time.

In Austria, and throughout Germany, Russia, The Netherlands, Belgium, Italy and Spain, both local and national exhibitions have been held with great success for the last sixty years. The French nation perhaps takes the highest rank in the line of these national exhibitions, certainly in point of numbers, fifty-three having been held in its cities and towns between the years 1803 and 1866. In Great Britain similar exhibitions were held a half century ago; and it will be remembered that the Mechanics' Institute, afterwards called the American Institute, started Industrial Exhibitions in New York about 1835, which have been continued annually ever since.

Local exhibitions have become annual occurrences in our Eastern and Western cities, and these collective displays of local industrial products and manufactures in the prominent cities of the United States have been useful agencies in broadening the circle of commercial intercourse, and in stimulating and developing new industries. The process has been the same on the other side of the ocean, and accompanied by the same results.

PRECEDING INTERNATIONAL EXHIBITIONS.

Exhibitions of an international character were the natural result and outgrowth of the local fairs and other annual displays referred to.

I.—FIRST INTERNATIONAL EXHIBITION, LONDON, 1851.

Prince Albert, as the President of the "London Society of Arts," was the first to suggest and devise the outlines of an International Exhibition.

Though the scheme had been under consideration for two or three years previously it only took form and was publicly recognized as a thing to be accomplished in 1849. In the

fall of that year the erection of the first structure for a Universal Exhibition was commenced. It is well known that the personal influence and able administrative skill of Prince Albert secured for this great undertaking the essential recognition of the government and co-operation of the people.

Commissioners were appointed by the authority of the Queen, who, under a royal charter of incorporation, supervised and conducted the Exhibition to its successful end.

The building was mainly constructed of iron and glass, and is still used for permanent exhibition at Sydenham. It was 1,851 feet long and covered 20 acres, being 25 feet shorter than the Philadelphia Main Building, but covered about the same surface.

The cost of the structure was \$933,003.94. The Exhibition was opened May 1st, 1851, and continued open 141 days, including Sundays. The total number of visitors was 6,039,195; receipts from admissions, \$2,051,143.28; expenses, \$1,546,083; average daily admissions, 42,831; average daily receipts, \$12,332.32; largest admissions in one day, 109,915; smallest in one day, 9,327.

The aggregate number of exhibitors was 13,937, of which 7,381 were from Great Britain and her Colonies.

Two International Exhibitions were held in 1853; one in New York, and the other in Dublin.

II.—INTERNATIONAL EXHIBITION, NEW YORK, 1853.

In January, 1852, the city government of New York leased the block bounded by Sixth avenue on the west, Fortieth and Forty-second streets on the north and south, and the Croton reservoir on the east, to the "Association for the Exhibition of the Industries of all Nations;" \$500,000 was the amount of stock issued. Among the conditions coupled with the charter were: price of admission to be not more than

50 cents, and the public schools and charitable institutions of the city to be admitted at least one day without charge; and the proceeds of one day's exhibition should be given over to the relief fund of the city fire departments of New York and Brooklyn.

The building occupied, practically, the entire block leased, and was constructed wholly of iron and glass. Those of us who can recall the structure will remember the "Crystal Palace" as emphatically a "thing of beauty." It was in form a Greek cross, with a central dome of great elegance. The length of the naves was 451 feet; additional space was supplied by galleries over large sections of the ground floors. The total superficial feet occupied was 249,691.

Compared with other World Exhibition buildings it was small, but for beauty of design and construction it has probably never been surpassed.

The New York Exhibition was only *semi*-international; whilst most of the European countries were represented, it was only in courteous response to informal invitations circulated through our representatives abroad. We cannot claim that our first great Exhibition was in all respects a success; it was, however, advantageous to our own home interests.

This beautiful building was destroyed by fire in 1858, while in the occupancy of the American Institute.

III.—INTERNATIONAL EXHIBITION, DUBLIN, 1853.

The Dublin Exhibition, of 1853, was upon a scale similar to that in New York, and in its inception was not designed to be anything more than local in character, under the auspices of the Royal Dublin Society, which had held triennial exhibitions for twenty years. But a wealthy and public-spirited contractor, entertaining enlarged views of the utility of the proposed exhibition, made such overtures

to the Society as led to its becoming an international affair. His first advance in money to the Society was about one hundred thousand dollars. Others followed, until the total contributions of William Dargon amounted to \$400,000.

The general dimensions of the building constructed at Dublin were 425 feet long, 100 feet wide, and 105 feet high, with two stories, and ample halls for machinery and art, the whole covering 265,000 square feet.

The visitors numbered 1,000,000, and the receipts for admissions \$229,000.

IV.—UNIVERSAL EXPOSITION AT PARIS, 1855.

The French have marvelous artistic resources in the construction and arrangement of public and private edifices, and their skill is notably displayed in organizing and conducting exhibitions and every kind of public ceremonies.

Their first international display was not generally regarded with favor by the people. But Louis Napoleon was not proverbially inclined to succumb to adverse sentiments of his own people, and, having decreed that a World's Exposition should be held in his idol city in 1855, appointed Prince Napoleon president and general manager of the exhibition.

Those who have visited Paris during the last twenty years will recall the beautiful permanent stone and iron structure on the Champs Elysées, known the world over as the *Palais de l'Industrie*. This building was erected upon a plan peculiar and probably not practicable anywhere else than in the French Capital. A French company put up the main building at its own cost, upon condition that all the revenues derived from public uses of the palace for thirty years should be paid over to the company. The plan of the building was not to be materially changed during the period, and after the termination of the lease of the ground the building was to remain as a national monument.

The length of this permanent structure, fronting on the Champs Elysées, with the rear facing the river Seine not far distant, is 827 feet, and 354 feet wide. The annex constructed on the river side of the palace was of immense size, viz.: 3,832 feet long, and only 89 feet wide, the shape of the structure necessarily conforming to the intervening space. This building was, of course, a temporary one, and was devoted to agricultural products, machinery, &c. An elevated and beautifully ornamented bridge connected this secondary building with the main one.

There were many special buildings in the adjacent grounds used for various exhibition purposes. The superficial feet under cover was about 1,263,773. The extensive gardens, too, which have for generations been the charm of the Champs Elysées, are interspersed with promenades, places of entertainment, cafés, fountains, &c., rendering it in the afternoon and evenings of the summer months the gayest rendezvous in the world.

The Exhibition was opened on the 15th of May, and closed on the 15th of November, being opened 200 days. The aggregate admissions was 5,162,330. Total receipts, \$618,718.33, whilst the expenses reached \$2,201,000, and the cost of the buildings about \$3,250,000. The number of exhibitors was 23,954; average daily attendance, 25,811; average daily receipts, \$3,131.48; largest attendance in one day, 123,017; smallest in one day, 9,327.

This Exhibition does not appear to have been conducted with much regard to profit. There were special reasons for the large excess of expenses over the receipts. When we remember that the price of admission on stated days was 20 centimes or about $3\frac{3}{4}$ cents, and certain other days entirely free, the deficit is partially explained. The masses in France can only participate in the advantages of these great public occasions at a nominal cost to themselves; and the

Emperor was ready to avail himself of the opportunity to ingratiate himself with his subjects.

It is well known that in France Sunday is not an exceptional day, and ordinarily the largest attendance on fêtes and exhibitions of all sorts is on that day. Sunday, September 9th, witnessed the highest number of visitors in Paris, which was 123,017.

V.—INTERNATIONAL EXHIBITION, LONDON, 1862.

The Fifth International Exhibition was that held in London in 1862. It might have been fairly assumed in advance that this second London display would exceed the one held in 1851, but in most respects it did not. The buildings were more costly, but their capacity was no greater.

The expenditure for the main building was \$2,221,800, the dimensions being, length 1,150 feet, width 650, and two stories in height. The second story was occupied with the art display, and it may be said that the art department on this occasion was probably the finest that had ever been seen either on the continent or in Great Britain.

The Exhibition opened the 1st of May and closed on the 15th of November, being open 171 days. The total admissions was 6,211,130; receipts from admissions, \$1,977,285.60; average daily admissions, \$36,328; average daily receipts, \$9,360.56; largest attendance in one day, 67,891; smallest in one day, 5,615; number of exhibitors, 28,653.

The system of charges was variable and peculiar, season tickets were issued, and also tickets for shorter time and to cover specified dates, making it quite difficult to compare the charges for admission with other systems.

The failure to realize expectations from this Exhibition is no doubt largely due to the very unexpected death of

Prince Albert, which occurred in the midst of the preparatory work, and only four months previous to the opening.

VI.—UNIVERSAL EXPOSITION AT PARIS, 1867.

The sixth International Exhibition was at Paris in 1867, and was one of great magnitude and undoubted success, and held under the direction of an Imperial Commission of sixty members, of which Prince Napoleon was President.

The location was on the Champs de Mars, a great military parade park in near proximity to the military school, rectangular in form, and containing about 119 acres. The island of Billancourt in the river Seine, of 52 acres, was added, making a total of 171 acres appropriated to the Exhibition.

Prince Napoleon was at the head of the Exhibition of 1855 also, and was an imperious but able leader on the present occasion. His plan of the main building, to accommodate every class of exhibits except agriculture and stock, was denominated by the Emperor as a "magnificent gasometer."

It is probable that this building and other preparations for the Exhibition, when dedicated by the Emperor and Empress on the opening day, were more incomplete than the preparations upon any other similar occasion before or since; but the transformation from chaos to order and completeness was marvelously expedited.

The palace was new and of novel design, and well adapted to its uses. It was a vast elliptical structure, covering 39 acres, or about 1,700,000 square feet. The outline dimensions were 1,608 feet by 1,247 feet. Stone and iron were the principal materials used in its construction.

In the centre was a garden 545 feet by 184 feet, rendered very effective by flowers, fountains and statuary.

The imperial commission describe this building very

lucidly as "an area with two main entrances, manufactures and products of cognate nations to be arranged in concentric bands, with a garden in the middle. The different nationalities to intersect the bands by transepts or avenues radiating from the centre." The outer ring was devoted to machinery, and the inner to the "history of labor," which was thought to be admirably carried out. The idea of this novel grouping was to bring kindred national products near together for comparison and study.

The remaining 80 acres of the 119 in the Champ de Mars were devoted to garden ornamentation, avenues and fountains, together with about one hundred special buildings erected by the various governments, partaking more or less of their national character.

The buildings for agriculture and agricultural machines and implements were erected on Billancourt Island, and covered thirty-six acres. The trial of agricultural machines took place on the Emperor's farms at St. Cloud and at Vincennes.

The number of exhibitors at this exhibition was 50,226, of which three-tenths were French. The total cost of the buildings, grounds, etc., was \$5,883,400, which was furnished by the Government, municipal authorities of Paris, and public subscriptions.

It was opened the 1st of April, 1867, and closed the 3d of November, being open 214 days, including Sundays. The total number of visitors was 8,706,037; receipts from admissions, \$1,903,155.65; average daily admissions, 40,682; average daily receipts, \$8,893.44; largest attendance in one day was on Sunday, October, 27th, 184,405; smallest in one day, 1,602.

We regret that from no source of information within our reach, tables similar to the one below could be found relating to other than the Paris Exposition of 1867. This table embodies the judgment of eminent professional men

on the relative condition of the arts and industries, as displayed at Paris, in the products of all countries. It will be noticed that our own country occupies a high position in the scale of special averages.

PERCENTAGE OF AWARDS TO EXHIBITORS.

NAME OF COUNTRY.	Percentage of Grand Prizes.	Percentage of Gold Medals.	Percentage of Silver Medals.	Percentage of Bronze Medals.	Percentage of Honorable Mention.	General Average Percentage.
GENERAL AVERAGE PERCENTAGE OF AWARDS TO EXHIBITORS.....	0.00175	0.02221	0.08113	0.12759	0.11265	34.53
SPECIAL AVERAGE:						
France	0.00306	0.04272	0.13742	0.20086	0.16166	55.57
United States.....	0.00932	0.03171	0.13432	0.17910	0.17350	52.79
Austria	0.00095	0.02722	0.12273	0.18194	0.14326	47.60
Prussia and North Germany	0.00226	0.02890	0.10760	0.18497	0.15028	47.40
Belgium.....	0.00161	0.01834	0.10518	0.15428	0.15326	43.26
Russia.....	0.00073	0.01538	0.06593	0.14945	0.10915	34.06
Switzerland	0.00092	0.01944	0.07500	0.11388	0.10926	31.85
Great Britain and Colonies..	0.00178	0.01829	0.06217	0.09531	0.08338	26.10
Italy	0.00122	0.00589	0.02826	0.06311	0.09338	19.18
Spain.....	0.00000	0.00794	0.02950	0.07630	0.07333	18.70

VII.—INTERNATIONAL EXHIBITION, VIENNA, 1873.

The Seventh International Exhibition was that of Vienna, in 1873, and in many respects the most notable of any that preceded it. It being the last of this character previous to our own at Philadelphia, naturally, our exhibition will be more frequently contrasted with it than with either of the others.

The Government of Austria appropriated about \$8,000,000 for the exposition, which must be regarded as extremely

liberal. The site selected for the Vienna display was scarcely less beautiful and convenient than that of its immediate successor and rival in Philadelphia.

The Prater and Danube—Fairmount and the Schuylkill, are each unrivaled for their natural beauties and advantages for the purposes to which they were devoted. The acreage of the Prater is about one-eighth larger than that of Fairmount—the former containing about four thousand acres, and the latter about thirty-two hundred. Visitors to both will readily concede that sections of the Prater have received more artistic ornamentation and cultivation than can be found in Fairmount; but for park and river scenery combined the Philadelphia location surpasses that of Vienna. Both parks are within city limits, and equally accessible by horse cars, steam railroads and boats, running from the centre of the two cities. The consolidated suburban towns with the city proper, make the population of Vienna about 1,100,000.

The main building was 2,800 feet long; the central transept passing through the magnificent rotunda was 625 feet in length, and 80 feet in width. There were sixteen minor transepts, 540 feet in length and 47 feet wide. Between these transepts were open courts, 100 feet wide, which were generally assigned to the nations occupying adjoining transepts, for pavilions, &c.

These transept sections were apportioned to the nations represented, in the general geographical order we find them placed on our school atlas, the United States and Japan occupying the extreme western and eastern ends of this building, and Russia and the United States the two ends of Machinery Hall.

The prominent feature of this imperial palace was the central dome, "a structure that has never been equalled in modern architecture." The diameter of the dome is 354 feet, and the height, including the appropriate Austrian

crown surmounting it, is 284 feet—more than twice the dimensions of any dome in the world. It was built of iron, and weighed 4,000 tons. The other buildings, for machinery, art, agriculture, horticulture, &c., were conveniently distributed from 350 to 500 feet from the grand central structure. As the opening period drew near, there were apprehensions that the buildings would not be ready in time, whereupon the Government detailed 4,000 soldiers to expedite the preparations.

As at Philadelphia, a great variety of special structures for exhibition and other purposes, were similarly grouped around the main exhibition buildings. These represented various nationalities in architecture, education, and many other objects of interest. The only American exhibit to which we will refer is that of a school-house, 34 by 50 feet. The principal work was sent from Chicago, the frame having been constructed of Austrian timber. The cost was \$4,813, and it was pronounced the most complete of its kind at the exhibition.

The square feet occupied by the Main Building was 1,833,000; Machinery Hall, 267,000; Art Hall and Annex, 340,000. The Exhibition opened May 1st and continued 186 days, including Sundays. The total number of admissions was 7,254,687; receipts from admissions, \$964,216.90; average daily admissions, 39,003; average daily receipts, \$5,183.96; largest admissions for any one day, 139,000.

The receipts from admissions were only about one-sixth of the estimate of Baron Schwarz previous to the opening. The total receipts for admissions, concessions, space, &c., was about \$2,000,000, to which might be added \$1,000,000 for sales of buildings, &c. The total cost having been about \$8,000,000, there must have been a loss of not far from \$5,000,000.

The regular admission fee was one florin, or twenty-five

cents. On the opening day the price of admission was \$12.50, at which price only 380 tickets were sold.

It is very difficult to obtain reliable details of the Vienna Exhibition. It is well known that the financial result was very disastrous and mortifying to the Austrian Government, and this perhaps may be considered among the reasons why so little has been found upon record, of a statistical character, relating to what was in many respects a grand exhibition. The figures we have furnished are not all from official sources, but are believed to be nearly correct.

INTERNATIONAL EXHIBITION, PHILADELPHIA, 1876.

We conclude these notices of International Exhibitions, of course, with our own. While the brief details we have furnished of previous Exhibitions only relate to what is of secondary importance they are nevertheless very properly referred to as of popular interest and of incidental significance.

The relative merits and reciprocal results of Exhibitions are problems not to be solved in a day. Protracted experience and observation only will reveal the beneficial results to flow from them.

The Philadelphia Exhibition was opened May 10th, 1876, and closed November 10th, a period of 159 days intervening, exclusive of Sundays, which have never been interdicted upon similar occasions, but in Great Britain and in our own country.

The Schuylkill Park Commissioners set apart 236 acres beautifully situated, and with unsurpassed natural advantages for such an Exhibition, which was enclosed with a lineal measurement of 16,000 feet of fencing. These grounds were on the west side of the Schuylkill River, north of Girard and Elm avenues, on a plateau 90 feet above the

river. Thirteen entrances were established along the boundaries, corresponding with the thirteen original States.

New avenues, walks, bridges, lakes and fountains were constructed to add to the ornamentation of the grounds, the central attraction of which was Horticultural Hall, elaborately terraced on all sides, and its inimitable flower parterre in front.

The grounds were wonderfully studded with State and other special buildings to a degree that necessitated the clustering of annexes and minor exhibition structures, which if possible it would have been well to avoid.

The following dimension figures of the Exhibition buildings are worthy of record :

Main Building,	1880 feet by	464.
Memorial Hall,	210 " "	365.
Machinery Hall,	1402 " "	360.
Horticultural Hall,	383 " "	193.
Agricultural Hall,	820 " "	540.
United States Government Building,	360 " "	300.
Carriage Building,	346 " "	231.
Photograph Building,	150 } 392 " "	107 { 30.
Photograph Building,	242 }	77.
Shoe and Leather Building,	314 " "	160.
Art Annex,	300 " "	250.
Mineral Annex,	600 " "	50.
Machinery Annex,	208 " "	210.
Pomological Annex,	192 " "	182.
Wagon Annex,	196 " "	144.
Brewers' Building,	272 " "	96.
Butter and Cheese Building,	116 " "	100.

The total square feet under roof for exhibition purposes was 2,418,169 or 57.8 acres.

Length of railroad track, for carrying passengers within the grounds, 4 miles, and for transporting material and exhibits, $3\frac{1}{2}$ miles.

The States which erected buildings for the use of the citizens thereof were New Jersey, New York, Pennsylvania, Ohio, Illinois, Missouri, Indiana, Massachusetts, West Virginia, Michigan, Wisconsin, Mississippi, Maryland, Maine, New Hampshire, Rhode Island, Delaware and Colorado.

The total outlay of the Exhibition, from the beginning to the close, is \$8,652,500.

The receipts are as follows :

State of Pennsylvania,	\$1,000,000
City of Philadelphia,	1,500,000
Concessions, interest, &c.,	500,000
Stock subscriptions,	2,278,950
United States,	1,500,000
Total receipts for admissions,	3,813,724
Sales of buildings,	285,000
	<hr/>
	\$10,877,674
Total cost,	8,652,500
	<hr/>
	\$2,225,174

The above surplus will possibly be lessened somewhat by still unsettled claims.

It will be remembered that the sums appropriated by the State of Pennsylvania and the city of Philadelphia were used in the erection of Memorial, Horticultural, and Machinery Halls, which interests are still represented by those permanent structures, respectively.

The subscriptions to the stock of this corporation received from individuals in the State of Pennsylvania was \$1,749,468, and from all other individual and State sources \$529,482, the total being \$2,278,950.

Congress appropriated, under an act dated February 16th, 1876, \$1,500,000. There seemed to be a question whether this was a donation or a loan to be repaid to the Govern-

ment, and the Board of Finance very properly submitted the case for adjudication to the Circuit Court of the United States in Philadelphia, which gave a decision in favor of the non-payment of the money to the United States. The case was carried to the Supreme Court at Washington. If the decision of the Circuit Court is affirmed, there will remain in the Centennial treasury for distribution to the stockholders about \$2,225,000, furnishing a dividend of 97½ per cent. If the ultimate decision is in favor of the Government,* then the stockholders will only get about 32 per cent. The difference to our State would be about \$65,000 on her \$100,000 subscription. There will, of course, be differences of opinion in reference to the interpretation of the law of Congress appropriating this money. If it was designed to be simply a loan, the return of which was contingent upon there being a surplus of earnings in the hands of the Board of Finance at the close of the exhibition, the repayment might very properly be insisted upon. This reimbursement would restore the original relations of the Government to the exhibition as non-contributors to the enterprise.

But it will probably be the first instance in history in which the central government of the nation under whose auspices similar exhibitions were held did not do more than simply announce its international character and invite other nations to participate in it. The precedent will pass into history, and when the time comes for another World's Exhibition in this country, the question of governmental aid will be re-discussed, and possibly be determined more nearly in harmony with the general sentiments of the people.

The total number of exhibitors at Philadelphia was about 27,000, which is much less than at Paris and Vienna. In 1867 there was at Paris 50,226 exhibitors, one-third of which

*The decision of the Circuit Court was reversed.

were from France. The value and magnitude of exhibitions are not to be thus gauged however. France and Germany swarm with artists and artizans of every grade, who throng these great public occasions, to display their goods and wares generally upon a small scale, but they swell the list of exhibitors very materially at the Continental Exhibitions.

TABLE OF ADMISSIONS.

Total free exhibitors, etc., admission,	\$1,906,692 00
“ cash admissions, live stock, at twenty-five cents,	90,448 00
Total cash admissions, Main Exhibition, at fifty cents,	7,250,620 00
Total cash admissions, Main Exhibition, at twenty-five cents,	663,206 00
	<hr/>
	\$9,910,966 00
Total receipts from admissions,	\$3,813,724 49
Average daily receipts,	23,985 69
Average daily admissions,	62,333
Largest day,	274,919
Smallest day,	12,720

**ACTS OF CONGRESS CREATING THE COMMISSION AND
BOARD OF FINANCE.**

An Act to provide for celebrating the One Hundredth Anniversary of American Independence, by holding an International Exhibition of Arts, Manufactures, and Products of the Soil and Mine, in the City of Philadelphia, and State of Pennsylvania, in the year eighteen hundred and seventy-six.

WHEREAS, The Declaration of Independence of the United States of America was prepared, signed, and promulgated in the year seventeen hundred and seventy-six, in the city of Philadelphia; *and whereas*, it behooves the people of the United States to celebrate, by appropriate ceremonies, the centennial anniversary of this memorable and decisive event, which constituted the fourth day of July, Anno Domini seventeen hundred and seventy-six, the birthday of the nation; *and whereas*, it is deemed fitting that the completion of the first century of our national existence shall be commemorated by an Exhibition of the natural resources of the country and their development, and of its progress in those arts which benefit mankind, in comparison with those of older nations; *and whereas*, no place is so appropriate for such an Exhibition as the city in which occurred the event it is designed to commemorate; *and whereas*, as the Exhibition should be a National Celebration, in which the people of the whole country should participate, it should have the sanction of the Congress of the United States; therefore,

SECTION 1. BE IT ENACTED *by the Senate and House of Representatives of the United States of America in Congress assembled*, That an Exhibition of American and Foreign Arts, Products and Manufactures, shall be held, under the auspices of the Government of the United States, in the city of Philadelphia, in the year eighteen hundred and seventy-six.

SECTION 2. That a Commission, to consist of not more than one delegate from each State, and from each Territory of the United States, whose functions shall continue until the close of the Exhibition, shall be constituted, whose duty it shall be to prepare and superintend the execution of a plan for holding the Exhibition; and after conference with the authorities of the city of Philadelphia, to fix upon a

suitable site within the corporate limits of said city, where the Exhibition shall be held.

SECTION 3. That said Commissioners shall be appointed within one year from the passage of this act, by the President of the United States, on the nomination of the Governors of the States and Territories respectively.

SECTION 4. That in the same manner there shall be appointed one Commissioner from each State and Territory of the United States, who shall assume the place and perform the duties of such Commissioner and Commissioners as may be unable to attend the meetings of the Commission.

SECTION 5. That the Commission shall hold its meetings in the city of Philadelphia, and that a majority of its members shall have full power to make all needful rules for its government.

SECTION 6. That the Commission shall report to Congress, at the first session after its appointment, a suitable date for opening and for closing the Exhibition; a schedule of appropriate ceremonies for opening and dedicating the same; a plan or plans of the buildings; a complete plan for the reception and classification of articles intended for exhibition; the requisite custom-house regulations for the introduction into this country of the articles from foreign countries intended for exhibition; and such other matters as in their judgment may be important.

SECTION 7. That no compensation for services shall be paid to the Commissioners or other officers provided by this act, from the Treasury of the United States; and the United States shall not be liable for any expenses attending such Exhibition, or by reason of the same.

SECTION 8. That whenever the President shall be informed by the Governor of the State of Pennsylvania that provision has been made for the erection of suitable buildings for the purpose, and for the exclusive control by the Commission herein provided for of the proposed Exhibition, the Presi-

dent shall, through the Department of State, make proclamation of the same, setting forth the time at which the Exhibition will open and the place at which it will be held; and he shall communicate to the diplomatic representatives of all nations copies of the same, together with such regulations as may be adopted by the Commissioners, for publication in their respective countries.

An Act relative to the Centennial International Exhibition to be held in the City of Philadelphia, State of Pennsylvania, in the year eighteen hundred and seventy-six.

WHEREAS, Congress did provide by an act entitled "An Act to provide for the celebrating the One Hundredth Anniversary of American Independence, by holding an International Exhibition of Arts, Manufactures, and Products of the Soil and Mine, in the city of Philadelphia, and State of Pennsylvania, in the year eighteen hundred and seventy-six," approved March third, eighteen hundred and seventy-one, for the appointment of Commissioners to promote and control the exhibition of the national resources and their development, and the nation's progress in arts which benefit mankind, and to suggest and direct appropriate ceremonies by which the people of the United States may commemorate that memorable and decisive event, the Declaration of American Independence by the Congress of the United Colonies, assembled in the City of Philadelphia, on the fourth day of July, Anno Domini seventeen hundred and seventy-six; and, whereas, such provisions should be made for procuring the funds requisite for the purposes aforesaid, as will enable all the people of the United States, who have shared the common blessings resulting from national independence, to aid in the preparation and conduct of said International Exhibition, and memorial celebration under the direction of the Commissioners of the United States; therefore,

BE IT ENACTED *by the Senate and House of Representatives of the United States of America in Congress assembled*, That there is hereby created a body corporate, to be known by the name of the Centennial Board of Finance, and by that name to have an incorporate existence until the object for which it is formed shall have been accomplished; and it shall be competent to sue and be sued, plead and be impleaded, defend and be defended, in all courts of law and equity in the United States; and may make and have a corporate seal, and may purchase, take, have, and hold, and may grant, sell, and at pleasure dispose of all such real and personal estate as may be required in carrying into effect the provisions of an Act of Congress, entitled "An Act to provide for celebrating the One Hundredth Anniversary of American Independence, by holding an International Exhibition of Arts and Manufactures, and Products of the Soil and Mine, in the City of Philadelphia, and State of Pennsylvania, in the year eighteen hundred and seventy-six," approved March third, eighteen hundred and seventy-one, and all acts supplementary thereto; and said Centennial Board of Finance shall consist of the following named persons, their associates and successors, from the States and Territories as herein set forth.

(Here follow the names of corporators of the several States, of which the following are from New Jersey :

At large: Joel Parker, Charles S. Olden, Marcus L. Ward, Theodore F. Randolph. First district: Thomas H. Whitney, Thomas R. McKeen. Second district: Charles Hewitt, Gershom Mott. Third district: James Bishop, Amos Clark, Jr. Fourth district: William Cowen, Charles Sitgreaves. Fifth district: Louis B. Cobb, Abram S. Hewitt. Sixth district: Thomas R. Peddie, George Peters. Seventh district: Benjamin G. Clark, Æneas Fitzpatrick.)

SECTION 2. That the said corporation shall have authority, and is hereby empowered to secure subscriptions of capi-

tal stock to an amount not exceeding ten million dollars, to be divided into shares of ten dollars each, and to issue to the subscribers of said stock certificates therefor under the corporate seal of said corporation, which certificates shall bear the signature of the President and Treasurer, and be transferable under such rules and regulations as may be made for the purpose; and it shall be lawful for any municipal or other corporate body existing by or under the laws of the United States, to subscribe and pay for shares of said capital stock; and all holders of said stock shall become associates in said corporation, and shall be entitled to one vote on each share; and it shall be the duty of the United States Centennial Commission to prescribe rules to enable absent stockholders to vote by proxy; the proceeds of said stock, together with the receipts from all other sources, shall be used by said corporation for the erection of suitable buildings, with their appropriate fixtures and appurtenances, and for all other expenditures required in carrying out the objects of the said Act of Congress of March third, eighteen hundred and seventy-one, and which may be incident thereto; and the said corporation shall keep regular minutes of its proceedings, and full accounts, with the vouchers thereof, of all the receipts and expenditures, and the same shall be always open to the inspection of the United States Centennial Commission, or any members thereof.

SECTION 3. The books of subscription shall be opened by the United States Centennial Commission, under such rules as it may prescribe; and an opportunity shall be given, during a period of one hundred days, to the citizens of each State and Territory to subscribe for stock to an amount not exceeding its quota, according to its population; after which period of one hundred days, stock not taken may be sold to any person or persons, or corporation willing to purchase the same.

SECTION 4. That after the expiration of said period of one hundred days, the United States Centennial Commission shall issue a call for a meeting by publication in one or more newspapers published at the capital of each State and Territory, not less than thirty days prior thereto, of the corporators and all others who may then have subscribed for stock, to be held in the City of Philadelphia, for the purpose of electing a Board of Directors, to consist of twenty-five stockholders, whose term of office shall be one year, and until their successors shall have been qualified; at which meeting those who may be present in person or by proxy, of whom one hundred shall constitute a quorum, shall be competent to organize and elect said officers; the said Board of Directors, and every subsequent Board, shall be chosen by the stockholders, out of a list of one hundred stockholders, selected and nominated by the United States Centennial Commission; nine members of the Board of Directors shall constitute a quorum for the transaction of business, but no election or change of officers shall take place unless at a meeting of the Board of Directors, at which a majority shall be present.

SECTION 5. That the said Board of Directors shall elect, from its own number, a president and two vice presidents, whose term of office shall be one year, and until their successors shall have been duly qualified, and shall appoint a treasurer, a secretary, and such other officers as may be required to carry out the purposes of the corporation; which elected and appointed officers shall hold their respective offices during the pleasure of the Board, receiving such compensation as the Board may prescribe; and the Board shall also adopt such by-laws, rules and regulations, for its own government and for the government of its officers, as may be deemed expedient; *provided*, that the same shall not be inconsistent with any act of Congress or the rules adopted by the United States Centennial Commission.

SECTION 6. That as soon as the Board of Directors shall have been duly organized, as provided for in section five of this act, it shall be the duty of the United States Centennial Commission to deliver to the said Board all stock subscription books, with the papers and records of any kind in its possession, pertaining to the same.

SECTION 7. That the grounds for the Exhibition shall be prepared and the buildings erected by the said corporation in accordance with the plans, which shall have been previously adopted by the United States Centennial Commission, and the rules and regulations of said corporation, governing rates for "entrance" and "admission" fees, or otherwise affecting the rights, privileges or interests of the exhibitors, or of the public, shall be fixed and established by the United States Centennial Commission; and no grant conferring rights or privileges of any description connected with the said grounds or buildings, or relating to said Exhibition or celebration, shall be made without the consent of the United States Centennial Commission; and said Commission shall have power to control, change or revoke all such grants, and shall appoint all judges and examiners, and award all premiums.

SECTION 8. That the Centennial Board of Finance shall have authority to issue bonds, not in excess of its capital stock, and secure the payment of the same, principal and interest, by mortgage upon its property and prospective income.

SECTION 9. That it shall be the duty of the Secretary of the Treasury of the United States, as soon as practicable after the passage of this act, to cause to be prepared, in accordance with a design approved by the United States Centennial Commission and the Secretary of the Treasury, a sufficient number of certificates of stock to meet the requirements of this act; and any person found guilty of counterfeiting, or attempting to counterfeit, or knowingly

circulating false certificates of stock, herein authorized, shall be subject to the same pains and penalties as are or may be provided by law for counterfeiting United States currency ; but nothing in this act shall be so construed as to create any liability of the United States, direct or indirect, for any debt or obligation incurred, nor for any claim, by the Centennial International Exhibition, or the corporation hereby created, for aid or pecuniary assistance from Congress or the Treasury of the United States, in support or liquidation of any debts or obligations created by the corporation herein authorized ; *and provided*, that nothing in this act shall be so construed as to override or interfere with the laws of any State ; and all contracts made in any State for the purposes of the Centennial International Exhibition shall be subject to the laws thereof ; *and provided further*, that no member of said Centennial Board of Finance assumes any personal liability for any debt or obligation which may be created or incurred by the corporation authorized by this act.

SECTION 10. That as soon as practicable after the said Exhibition shall have been closed, it shall be the duty of said corporation to convert its property into cash, and, after the payment of all its liabilities, to divide its remaining assets among its stockholders, *pro rata*, in full satisfaction and discharge of its capital stock. And it shall be the duty of the United States Centennial Commission to supervise the closing up of the affairs of said corporation, to audit its accounts, and submit, in a report to the President of the United States, the financial results of the Centennial Exhibition.

SECTION 11. That the Commission created by the act referred to in the preamble of this act, is hereby made and constituted a body politic and corporate in law, with power to do such acts, and to enter into such obligations as may be promotive of the purposes for which such Commission was established. Its title shall be the United States Centen-

nia] Commission. It shall have a common and corporate seal, and possess all the rights incident to corporate existence.

SECTION 12. That the Alternate Commissioners appointed pursuant to section four of the act approved March third, eighteen hundred and seventy-one, referred to in the preamble to this act, shall have all the powers of a Commissioner when the Commissioner is not present at any meeting. When the Commissioner is present the Alternate may participate in the debates and serve on committees, but shall have no vote. The appointment of all the Commissioners and Alternate Commissioners made since March third, eighteen hundred and seventy-two, are hereby ratified and confirmed; and all vacancies now existing, or which may hereafter exist, whether by death, resignation, removal from the State or Territory, or otherwise, shall be filled, at any time hereafter, in like manner as is provided in said act of March third, eighteen hundred and seventy-one, for the appointment of Commissioners.

SECTION 13. That it shall be the duty of the United States Centennial Commission to make report, from time to time, to the President of the United States, of the progress of the work, and in a final report present a full exhibit of the result of the United States Centennial Celebration and Exhibition of eighteen hundred and seventy-six.

Approved June 1st, 1872.

INVITATION TO FOREIGN GOVERNMENTS.

WHEREAS, At various International Exhibitions which have been held in foreign countries, the United States have been represented in pursuance of invitations given by the governments of those countries, and accepted by our government; therefore,

BE IT ENACTED *by the Senate and House of Representatives*

of the United States of America in Congress assembled, That the President be requested to extend, in the name of the United States, a respectful and cordial invitation to the governments of other nations, to be represented and take part in the International Exposition to be held at Philadelphia, under the auspices of the Government of the United States, in the year eighteen hundred and seventy-six; provided, however, that the United States shall not be liable, directly or indirectly, for any expenses attending such Exposition, or by reason of the same.

Approved June 5, 1874.

ACTS OF NEW JERSEY LEGISLATURE CREATING THE STATE CENTENNIAL BOARD, AND MAKING APPROPRIATIONS.

An Act to authorize the appointment of a Centennial Board for this State, and to define its duties.

1. BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey*, That there shall be appointed for this State, on nomination by the Governor, to be confirmed by the Senate, seven persons, who shall be residents of the State, who with the United States Centennial Commissioner and alternate from New Jersey, shall constitute "The New Jersey State Centennial Board."

2. *And be it enacted*, That it shall be the duty of "The New Jersey State Centennial Board" to co-operate with the United States Centennial Commission in encouraging and forwarding the objects of the International Exhibition of eighteen hundred and seventy-six, authorized by the Congress of the United States, to be held in the city of Philadelphia, and especially to organize, prepare, superintend and have the general management of the New Jersey department of the said Centennial Exhibition.

3. *And be it enacted*, That to accomplish the objects stated in the next preceding section, it shall be the duty of "The

New Jersey State Centennial Board" to disseminate throughout this State information regarding said proposed exhibition ; to take measures to secure the co-operation of scientific, agricultural, mechanical, manufacturing and other associations in the several counties ; to appoint co-operative local committees (where the people of the locality do not appoint) representing the respective industries of the State ; to stimulate local action designed to make the New Jersey department of the Exhibition worthy the State ; to encourage the production of articles suitable for exhibition ; to render assistance in furthering the finance and other interests of the Exhibition, and furnishing information to the United States Centennial Commission and to the people of the State on all subjects connected with the success thereof.

4. *And be it enacted*, That the said board shall continue until such time after the close of the said Exhibition as will be necessary to complete and settle the business connected therewith, not later than the first day of January, Anno Domini eighteen hundred and seventy-seven.

5. *And be it enacted*, That the members of said board shall not receive any compensation for their services.

6. *And be it enacted*, That to pay the necessary expenses attending and consequent upon the discharge of their duties, and to enable the State Geologist to prepare and arrange for exhibition specimens of the minerals of the State and other articles belonging to his department ; and for such aid and assistance as shall be necessary to carry out the objects of this act, there be hereby appropriated the sum of ten thousand dollars, and that out of the same there shall be paid so much as shall be necessary to defray the expenses as aforesaid, to be paid by the treasurer of the State upon the warrant of the comptroller, upon being certified by the president of said board ; the whole amount paid not to exceed ten thousand dollars.

7. *And be it enacted*, That this act shall take effect immediately.

Approved April 8, 1875.

Supplements to the Act authorizing the Appointment of a Centennial Board for this State, and defining its Duties, approved April 8th, 1875.

1. BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey*, That for the purposes contemplated in the act to which this is a supplement, the further sum of ten thousand dollars is hereby appropriated, to be paid by the treasurer of this State upon the warrant of the comptroller, certified by the president of the said board of commissioners.

2. *And be it enacted*, That this act shall take effect immediately.

Approved February 15, 1876.

1. BE IT ENACTED *by the Senate and General Assembly of the State of New Jersey*, That it shall be the duty of the State Board of Education to secure a proper exhibit of the educational interests of this State at the Centennial Exhibition at Philadelphia.

2. *And be it enacted*, That for the purpose of defraying the expenses incurred in securing said exhibit, a sufficient sum, not to exceed four thousand dollars, is hereby appropriated, to be paid by the treasurer of this State on warrant of the comptroller, upon being certified by the president and secretary of said board.

3. *And be it enacted*, That this act shall go into effect immediately.

Approved March 15, 1876.

ORGANIZATION AND PROGRESS OF THE EXHIBITION.

The acts of Congress creating the Centennial Commission and the Board of Finance fix the relations of the National Government to the Exhibition ; and the President's proclamation in pursuance of the act approved June 5th, 1874, fully established its international character.

The preliminary steps contemplated by the law, embracing the appointment of Commissioners, their organization and adoption of incipient measures demanded by the law to precede the first proclamation, having been duly complied with, the President, under date of July 3d, 1873, announced, "in conformity with the provisions of the act of Congress aforesaid, do hereby declare and proclaim that there will be held, at the city of Philadelphia, in the State of Pennsylvania, an International Exhibition of Arts, Manufactures and Products of the Soil and Mine, to be opened on the nineteenth day of April, 1876, and to be closed on the nineteenth day of October, in the same year. And in the interest of peace, civilization, and domestic and international friendship and intercourse, I commend the celebration and Exhibition to the people of the United States; and, in behalf of this Government and people, I cordially commend them to all nations who may be pleased to take part therein."

The time of opening and closing the Exhibition was subsequently changed by the Commission to May 10th and November 10th.

Whatever was needful to invest the enterprise with authority and dignity was no longer lacking. The recognition by Congress and the President, together with assurances from the Commissioners that provision was made for the erection of suitable buildings, were significant indications that there was to be a national celebration ; and that the people were

now confidently relied upon to make it worthy of the occasion to be commemorated.

The time had now come for earnest and vigorous work ; and the first in importance and most indispensable of all devolved upon the financial department. It was quite natural and manifestly proper, that Philadelphia should be relied upon largely to furnish men of well known probity and skill to assume prominence in the monetary affairs of the Exhibition. Her service in this special regard, is everywhere and by everybody applauded. To eulogize Philadelphia's agency in the well nigh faultless direction and management of the complex duties which devolved upon the Board of Finance, it is only needful personally to refer to her able representative, the Hon. John Welsh. His services have been appropriately and enduringly recognized by his fellow citizens in Philadelphia, and the nation will acquiesce in the justice of thus associating his name with the Pennsylvania University.

While the Financial Department of the Exhibition was of primary importance, the responsibilities and duties devolving upon Director General A. T. Goshorn were scarcely less essential in their relations to the successful prosecution of the enterprise. A lack of adaptability or efficiency in either would have seriously embarrassed and imperilled the working and results of the entire scheme. It does not appear that there was any want of foresight in the selection of the heads of these departments.

The duties of the President of the Commission were less onerous than those of either of the gentlemen already named. Only during the last year of his incumbency was it necessary for him to give his entire time to the Centennial. Just previous to the opening, General Hawley entered with great vigor and earnestness into the work assigned to him as the head of the United States Commission, and he displayed eminent ability as an executive officer.

We could extend our commendation almost indefinitely, and embrace secretaries, heads of departments and others who were notably identified with the preparation and prosecution of the vast labor demanded by this great Exhibition.

The enterprise, in its conception and results, has a direct bearing upon every individual, State and national interest, consequently these gentlemen, from the head of the list down, have rendered valuable services to the Nation, which are entitled to generous recognition, and from what source could it more appropriately come than from State Boards. What we have said in this connection has a double signification with us, and relates partially to our extremely pleasant intercourse with Centennial officials generally; and we can state with great emphasis that the interests of New Jersey have never failed to receive the most cordial consideration at their hands.

To review and aggregate the good results and achievements of this remarkable exhibition would exceed reasonable limits, and would also be a deviation from our purpose to confine the report mainly to the State and her public and individual interests represented at Philadelphia.

As was expected and desired by Congress and those who had been selected to organize this stupendous enterprise, the occasion drew together a rival display of world-wide products, comprising every department of manufactures, science and art. The participants from the Old World and the New have nobly co-operated to render the display as notably international as possible, and they are alike entitled to universal respect and commendation.

The opportunity was presented in Fairmount Park, to our manufacturers and artisans of every variety and grade, of unfolding to the gaze of the world, the illustrated evidences of progress during our first century in civilization and every productive industry under the American system of government, and utilitarian methods of developing the

singular combination of natural resources and advantages in our possession.

The United States Department of the Exhibition as a whole was eminently replete, and comprehensively displayed our nation's progress in every sphere of industrial pursuit, but still more conspicuously, our proficiency and capabilities in the great staple manufacturing products in which we are, without doubt, destined to outrival all other manufacturing and commercial nations of Europe. Neither have we occasion to withhold from comparison with foreign rivals the evidence of what has been wrought in the scale of science and art.

In every aspect this Exhibition has been a signal success, and of undoubted advantage to the civilized world; but to our own country in a degree without doubt surpassing all others engaged in this peaceful but vigorous rivalry. Time only will disclose the full measure of benefits that will inevitably accrue, to a greater or less extent, to the nations whose enterprise, wealth and resources have combined to make the Philadelphia Exhibition pre-eminently more successful than any that has preceded it.

Referring again to the United States Department, if such success was attainable during a period of unusual business depression, what might have been expected and realized under a more favorable condition of our commercial and manufacturing industries? While some sections of our country failed to contribute and advance the general interests and success of this great undertaking to the extent that was anticipated, it is charitable to conclude that in most cases satisfactory reasons existed for withholding that which otherwise would have emphasized and enhanced its national significance. The co-operation, however, was sufficiently general and spontaneous to leave no important interest or section of the Union without effective representation.

If the chief object of this grand Exhibition had been to educate the people, and to bring together with that view only, the products and natural resources, with the evidences of progress in mechanical arts and sciences of the entire group of nations, it would scarcely have been possible to accomplish that object more effectively than has been done on this occasion. A decade of years employed in the ordinary school and college courses would fail to furnish as valuable results to the student as have been acquired by thousands who have made this Exposition an occasion of research among the representative products and manufactures, grouped together with the view of illustrating the climate, soil, skill and habits of every civilized nation in the world. Some of the remote and less frequented countries have contributed impressive and artistic representations of mountain, valley and river scenery; architecture, mines, agriculture, and striking groups and costumed peasantry, all of which are of practical value and essential aids to a completed education, but unattainable in their fulness to the student who is deprived of the means and opportunity of extensive travel.

How varied and regretful are the reflections awakened by the final closing of an Exhibition of such magnitude and absorbing interest. "Its true value as a vast educational influence will remain a perpetual legacy to the people."

We very well know that the early friends and promoters of the *exhibition* feature of the Centennial Celebration at Philadelphia encountered no little opposition, but much of it was obviously the offspring of local jealousy. The most potent reason assigned for postponing or abandoning the Exhibition had reference to the wide spread monetary and general business disturbances, extending beyond the limits of our own continent. There was much force in this objection, and it was the occasion of well grounded convictions with

many, that the scheme might be wisely deferred. But the sentiment favorable to some sort of a national commemoration of the Centennial year was so in the ascendant, that adverse convictions and remonstrances failed to produce any appreciable effect.

NEW JERSEY'S INFLUENCE IN BEHALF OF THE CENTENNIAL.

The State of New Jersey has throughout been in accord and close sympathy with Pennsylvania in fostering and advancing the interests of the Centennial Celebration. Her citizens, with remarkable unanimity, have from the very first regarded the Exhibition as eminently patriotic in purpose, and a singularly appropriate mode of impressing the century's achievements upon the acceptance and admiration of the world. They, with one voice, acquiesced in the fitness of the place chosen for the magnificent spectacle; and how could they do otherwise since the two States, New Jersey and Pennsylvania, in an especial sense, can claim a joint patrimony in the results of revolutionary conflicts, the recollections of which cluster and locate themselves on kindred soil just across our border lines, now for the second time to be hallowed by an equally patriotic, but more peaceful spectacle, in which all nations were invited to participate, but which was nevertheless designed to be an occasion for the United States to display a comprehensive embodiment of its first century's progress.

We can recall the time when the success of this vast undertaking was poised in doubt, the scale as likely to incline one way as the other. It was perhaps fortunate for your Commissioners personally, and in no small degree helpful and promotive of our State interests at large, that they had the privilege of representing a community whose early and steadfast vindication of the Philadelphia plan of celebrating the Centennial year was of acknowledged value in its

awakening influences upon other communities. It is simply truthful to say that the Board of Finance, at this juncture, was not a little disheartened by the indifference and lack of ready concurrence and hearty co-operation relied upon in important centres of influence to provide the means for carrying on their work. But their faith in the ultimate success of the enterprise was stable, and would not allow them to be dissuaded from their purpose to persevere and overcome the quite prevalent disinclination in certain coveted localities to favor the project. Just what was needed to inspire confidence and to impart new life and vigor to the undertaking, was seemingly reserved for our own little State to supply.

Governor Joel Parker was an unwavering friend and efficient advocate of the Centennial celebration from the start. He briefly referred to the proposed Centennial celebration in his message of 1873. And in his following annual message in 1874 very forcibly and at considerable length urged the legislature and citizens of New Jersey to prompt and vigorous measures in the interest of the Exhibition.

The members of both houses in 1874 were largely in accord with the sentiments of the Governor, and the people generally throughout the State, upon that subject. At this juncture, however, there was not entire unanimity evinced in reference to the propriety of a legislative appropriation in behalf of this enterprise. But the conviction was becoming daily more universal that, as a State, we were not at liberty to withhold either our approval of the scheme nor our hearty and substantial co-operation in the patriotic endeavor to render the Centennial year conspicuous and memorable for all time.

The proposed Philadelphia jubilee was now everywhere the topic of thought and conversation, and was to take prominence in all legislative deliberations that Winter, with the view to secure donations or some other form of

State aid to the undertaking. Friendly State action was regarded as essential to an awakened public sentiment in this direction, hence the urgency of bringing the matter before legislative bodies as speedily as possible.

ONE HUNDRED THOUSAND DOLLARS APPROPRIATED BY THE
LEGISLATURE.

The Governor's spirited utterances to the two houses were responded to with encouraging promptness. A bill was introduced as soon as the two houses were ready for work, authorizing an appropriation of \$100,000, to be invested in Centennial stock. Ours being the pioneer State to proffer aid in this way and for this purpose, the amount proposed was thought by some to be too large, and by others at least wholly inexpedient or unconstitutional. There were honest differences of opinion upon the subject, which did not necessarily betoken an unfriendly feeling towards the celebration.

The bill referred to was presented in the Senate the last week in January, and passed that body February 9th. It was delivered to the House of Assembly with as little delay as possible. Here it met with more opposition, but was finally passed on the 26th of February.

The United States Commissioners and Board of Finance had assumed the management of a vast undertaking, involving the expenditure of an unusual amount of thought, labor and money. They were each ready to avail themselves of the assistance of all who would work in the interest of their cause.

WOMEN'S WORK FOR THE CENTENNIAL.

The Commissioners "thought it desirable to secure the co-operation of the women of the United States in the great

work of celebrating the One-hundredth Anniversary of American Independence," therefore they resolved that Mrs. E. P. Gillespie, of Philadelphia, and twelve other ladies and their associates be authorized and constituted the "Woman's Branch of the United States Centennial Commission," with power to appoint associates and agents throughout the States and Territories.

There was no novelty in soliciting the services of the ladies in an enterprise so fitly demanding the united efforts of both sexes, but wise forethought, as the sequel proved that they not only excelled in awakening a Centennial fervor throughout the country, but in many ways advanced the interests of the general Exhibition, and, more than all, provided the means to construct and maintain, unaided by other funds, the Women's Pavilion and fill its ample dimensions with a unique display of women's handiwork—of which it may be truthfully said no other collective exhibit in the Park was more uniformly thronged with interested visitors.

The central bureau of this organization was very properly located in Philadelphia, and it became a very spirited and efficient body of workers in the one great cause, under the able presidency of Mrs. Gillespie.

Mrs. William L. Dayton and Mrs. John G. Stevens, receiving their appointments from Philadelphia, most worthily represented this auxiliary agency in our own State, with the aid of county committees selected by them, some of whom, it will be noticed in another part of this report, rendered effective service, in a financial sense.

As one of the means of stimulating public effort on the part of the ladies of the State they issued the following circular:

UNITED STATES CENTENNIAL COMMISSION,
WOMEN'S BRANCH FOR NEW JERSEY,MRS. WM. L. DAYTON, } *Committee.*
MRS. JNO. G. STEVENS, }

As the great Centennial year approaches, it is proper and needful that every community should become more interested and absorbed in the endeavor to render the Exhibition a crowning success.

One year from May 10th, the opening of the Exhibition is expected to occur, and we may confidently look forward to the event, which, in its general significance and practical illustration of our nation's development and progress, has hitherto had no parallel.

The preparations for this International display are upon such a stupendous scale, that it behooves every one who proposes to become a contributor, not to be dilatory, but expeditious in the preparatory work. In a few weeks the space in the various departments may be wholly allotted to the early applicants, and from present indications it is not at all improbable that the ultimate demand will exceed the supply.

The celebrations now frequently occurring in various parts of our country, are most naturally awakening a new interest in the National Centennial; and the managers of that great undertaking are now urging efficient and prompt action on the part of all State and municipal agencies employed in Centennial work.

It is to be hoped that the Women's Branch throughout will participate in this general re-awakened interest, and will, with persistent zeal, advance what has been so auspiciously commenced.

The season for festivity and recreation is near at hand, and can most fittingly be rendered available in many ways, to enkindle and arouse our citizens to new efforts in the interest of this notable event, and add somewhat, incidentally,

to the revenue of the Board of Finance. It is not expected that the ladies will bring into the treasury contributions that will swell the aggregate by tens of thousands, but they can, nevertheless, effectively gather in smaller sums, the total of which will replenish the treasury very materially, and at the same time do essential service in this good cause, by stimulating to new endeavors and inspiring the men and women all over the State with a lively personal interest in behalf of our grand national birthday celebration.

The preliminary work of the Board of Commissioners related more especially to providing the means for erecting suitable buildings and preparing the grounds for this extraordinary occasion, the total cost of which necessitated the raising of a very large amount of money. The efforts in this direction have been quite successful, but there is still need of large accessions to the funds of the Board of Finance; and this necessity has prompted the passage of a resolution by that board, which has been concurred in by the Executive Committee, to the effect "that one-half of the net proceeds of each entertainment, held in the interest of the Centennial, shall be given as a free gift to the Building Fund, and the remaining half to be reserved by the committee holding the entertainment, for the use of the Women's Department." It will be remembered that it was originally contemplated to reserve in our own hands, for the interest of our State's Department the whole amount gained by these auxiliary agencies. It must be manifest, however, to all that this resolution embodies only a reasonable request, and we do not doubt that it will be cheerfully acquiesced in. It is of first importance that appropriate and ample provisions should be made for the Exhibition, and it is clearly every one's duty to recognize this *prerequisite* and help to supply it. Without buildings, the Exhibition would be an ignoble failure. As each committee, therefore is to have control of its own funds, all we demand in reference

to the results of their labors, is that we may be furnished with the total amount of money raised from time to time in the various counties of this State, under the authority of the Women's Board, to enable us to make, at the proper time, a full report of New Jersey's contributions to this cause.

Let no individual or community be unmindful of the good results that will inevitably accrue for the benefit of every material interest within the boundaries of our commonwealth, even though only the moderate expectation of friends of the enterprise are realized. Our adjacent position, together with our vast variety of mechanical and agricultural pursuits, obviously place this State among the first to derive benefit from the Centennial, if we use our best endeavors to promote its success. Should we then, by indifference and inaction, fail to utilize to the fullest extent the advantages that are thus to be conspicuously set before us upon our borders, and even at our very doors?

Trenton, June, 1875.

The most successful mode adopted by the ladies in the larger towns and cities through most of the States for interesting the people in the Centennial and raising money in its behalf, was that of Tea Parties and Festivals, varied to suit the tastes and conveniences of localities. The ladies of New Jersey have had accorded to them high praise from abroad for their zeal and good taste displayed on these festival occasions. As but few of the counties took an active part in what was designed to be general, the total result of ladies' work in our State was extremely gratifying. A detailed statement of the receipts and disposition made of the Women's Fund will be found in its appropriate place.

APPOINTMENT OF STATE COMMISSIONERS.

Governor Bedle, in his Inaugural Message, thus referred to the approaching Centennial: "The people ought not to overlook the importance of securing to our State a representation in the National Centennial commensurate with her dignity, her history and growth, and to encourage and arrange for it. It is desirable that provision be made at this session for the appointment of a suitable commission."

In concurrence with these suggestions a bill was presented, passed and approved April 8th, 1875, providing for the appointment of seven persons, who shall constitute "The New Jersey State Centennial Board." The following were appointed: Edward Bettle, First district; Samuel C. Brown, Second district; Henry L. Janeway, Third district; John T. Bird, Fourth district; Thomas N. Dale, Fifth district; Sandford B. Hunt, Sixth district; Nathan W. Condict, Jr., Seventh district.

Under the act of Congress approved March 3d, 1871, Orestes Cleveland and John G. Stevens were appointed by the President, upon the nomination of the Governor, National Commissioners for this State.

Thomas H. Dudley, with great assiduity and ability, represented New Jersey in the Board of Finance.

ADDITIONAL STATE APPROPRIATIONS—TOTAL PUBLIC AND PRIVATE CONTRIBUTIONS FROM NEW JERSEY.

Governor Bedle was earnest and anxious to have our State, and every State interest well displayed at the near approaching Exhibition, and his Annual Message of 1876 again urged the attention of the Legislature to the subject, that ample provision might be made to complete the preparations in a proper manner. He said: "The Commissioners have been very diligent in providing for a proper representation of the

State at the Centennial in Philadelphia. No State will reap a more durable benefit from the Exhibition than this. The appropriation of last session is inadequate to meet their necessary expenditures, considerable of it will be consumed in the work of the Geological Board in gathering and preparing its mineral and other specimens. * * * The Commissioners, alike with those of other States, are erecting a building for the common use of the people of this State on the Centennial ground. * * * I recommend a further appropriation to enable this Commission to complete the duties under the law, and the completion of the building."

An additional appropriation was made for the use of the State Board of Commissioners, of ten thousand dollars, and four thousand dollars were also appropriated to be expended by the State Board of Education for the preparation of the educational exhibit.

It will thus be seen that the total appropriations of our Legislature for Centennial purposes was one hundred and twenty-four thousand dollars (\$124,000).

Individual subscriptions to the stock from our State were six thousand five hundred and seventy-four dollars (\$6,574). In order to ascertain the total amount raised in New Jersey for the Centennial, we must add to the above sums \$16,384.68 raised by the Women's Department, which gives us a total of \$146,958.68, or 56½ per cent. of the whole amount of State and individual stock subscriptions received from *all* the States and Territories of the Union, excepting Pennsylvania and New York. Pennsylvania's was \$1,749,468; New York, \$266,922. Ten thousand dollars of the latter was from the Legislature for the use of the New York Board of Commissioners; the remaining sum was from individual sources.

Before the first year of initial preparations for the Exhibition had elapsed, its magnitude in every phase had expanded beyond the limit conceived as possible by even those

whose province it was to plan and organize the vast scheme. With such ambitious proclivities, could the Centennial year have been prolonged to the full limit of the expansive tendencies of the enterprise, there would probably have been necessity for an appeal to the Park Commissioners to enlarge the area. It is conceded that the Exhibition in many of its features and proportions did exceed the early calculations of its projectors, and thus rendered it necessary for them to modify and enlarge some of their primary conceptions of what the occasion demanded. No one can doubt that if it had been possible to prefigure the Exhibition in all its magnitude and ramified phases and results, in advance of all preparations for it, that, grand and successful as it was, the American department would have been still more comprehensive and diversified—displaying upon a scale more nearly corresponding with truthful estimates of our vast developed and undeveloped natural resources; our almost limitless manufactures and useful industries; in fact everything, our possessions, our skill, and our helpful civilization and system of government combined have enabled us to achieve in the century, that is of advantage to ourselves and the world.

STATE COLLECTIVE EXHIBITS.

We had the honor of representing a State which owed it to itself to be foremost and conspicuous at this Anniversary of our Independence. Not only because of her vigorous and invincible part enacted in the acquisition of that independence, but no other State, for many reasons, was possessed of such opportunities as ours to aid the enterprise, and at the same time have the promise of as large measure of benefits from it. These incentives were duly considered and sensibly operative upon our citizens in a continuous fostering of the undertaking and in keeping up a lively

conviction that the opportunity was soon to be enjoyed for revealing and displaying what our State really does possess in the line of established manufacturing and other productive industries, and our superior advantages for still greater attainments in that direction. It will be a surprise to many in and out of this State to learn that New Jersey is already the *fifth* manufacturing State in the Union; and our surprising progress hitherto, with the same allurements in force, give assurance that we may become the second or third. Capital, enterprise and skilled labor have a coherent tendency to cluster and concentrate, impelled by obvious and undoubted benefits to flow from such aggregation of interests. The New England States furnish unnumbered illustrations of this theory and practice.

While there were some important branches of business extensively prosecuted within our border that were not represented at all, or inadequately, it may be said that our State and her abundant industries and resources—and, with all, her patriotism—were placed on exhibition effectively and with unwonted satisfaction to her citizens.

If we limit our review of what New Jersey displayed at the Centennial to the *individual* exhibits—which were in all respects unsurpassed in quality—she would fail to receive her full quota of commendation. Our State exhibits were surely unexcelled. The “Geological Survey” alone contained enough of representative wealth to impart distinction to this State enjoyed by no other in that specialty. Our wonderful mineral resources, fertilizers, soils, &c., were displayed by the distinguished State Geologist, Prof. George H. Cook, in a manner that elicited the highest praise from every quarter, and secured for it the first award under that group, which will be found in its appropriate place.

Our Educational Department was prepared by the State Superintendent, E. A. Apgar, under the direction of the State Board of Education. Every public and private school

in the State contributed something to make up the exhibit, "which consisted of drawings, maps, mathematical operations, penmanship, grammatical work, composition, primary work, and all branches found in the schools." This work, in bound form, constituted 438 volumes, and contained 14,859 specimens of pupils' work. Two hundred and thirty-seven frames, containing drawings, maps and penmanship, were suspended in view. The portfolios contained 189 specimens of drawings and maps.

Both Princeton and Rutgers College occupied sections of the space allotted to the department.

The Princeton College exhibit was rendered specially noteworthy by the display of 730 volumes, which were written by graduates and officers of that venerable institution, principally, however, by the former. A list of authors of these volumes would embrace a surprising number of eminent statesmen, theologians and scientists.

Two colleges were represented; private schools, 37; ungraded public schools, 1,184; graded public schools, 230; and high schools 8. The total schools not represented, 120. The number of pupils who furnished work is about 14,000. The aggregate number of specimens of all kinds on view was 17,662.

This department was considered, in some respects, the most complete in the Exhibition. The *New York Tribune* said of it: "None shows such a comprehensive collection of school work." Other equally complimentary notices were found within and without our own State. A more detailed description of the educational exhibit will be found in its proper place.

The only sections relating to general State interests that were inadequately presented were those of Agriculture and Horticulture. They will each be referred to more fully under their appropriate heading. The deficiency in these two important sections was not so much in the quality as in the

quantities and variety. New Jersey can safely invite competition from any source or locality in soil products. For some reason there was a lack of interest in these New Jersey specialties which was inexcusable. The articles which were exhibited in Agricultural Hall were not excelled by those of any other section of the country; and this rendered the paucity of the exhibit the more noticeable.

STATE BUILDING—ITS ADVANTAGES AND POPULARITY.

There was scarcely any feature of the Philadelphia Exhibition, not contemplated in the early stages of the enterprise, that eventuated so auspiciously, and was the occasion of such universal and unqualified satisfaction, as that of the State Buildings. As the season advanced they became more and more a recognized necessity. We feel well assured, and it will ever be a pleasant reflection to your Commissioners if the assurance is substantiated, that they were the first to indicate the need of these conveniences at State expense.

It is a noteworthy incident that the first site selected for our building was on State avenue, precisely where the Connecticut building stood, in some regards the most desirable spot in the grounds. When the second choice of location was determined upon none of the special buildings, and but few of those for Exhibition uses even were definitely located, so that we were unaware of what structures and what exhibits would be placed upon the border lines of our building lot; consequently we were uninfluenced by any other than the single desire to locate New Jersey's Centennial hospitality where it would be most accessible and conveniently enjoyed by her citizen visitors to the Centennial. There was subsequently an unexpected clustering of buildings in close proximity to ours, but we were nevertheless almost wholly exempt from objectionable surroundings.

The Government Building in front, and the Kansas Agricultural Museum in the rear, were each objects of special interest and thronged continually. "Uncle Sam" was the only irresponsible and incorrigible exhibitor within our range with whom we had any disposition to cavil. Had not the old gentleman so studiously avoided our precinct, and authorized his *brazen spokesman* to represent him on all occasions, there might have ensued such a collision as would render possible a second "disruption" of the Union by the irrevocable withdrawal of New Jersey, the *withering* effects of which even his "Horn" majesty could not transcend. It has this moment occurred to us that the uniform absence of our "paternal" neighbor was not wholly due to his unmusical taste, but more perhaps to a consciousness of having offended intensely the sensibilities of masses of people who are proverbial dispensers of "Jersey justice." Without wishing to libel our "uncle" we will only venture further to say, that had he wisely consulted us before locating some of his "*high-toned*" exhibits, we should have suggested the construction of a "Telephone" about thirty miles in length leading coastwise, and placing at the *remotest* terminal the renowned "Fog Horn," and its "Bell" companion with their trained conductors to practice the art of transmitting *base solos* to the Centennial terminal. If successful, the vocal power of the soloist would have been vindicated and, doubtless, have received a unanimous award of—"distance lends enchantment."

There remains one more notable building on the easterly border of the New Jersey headquarters demanding our approved attention. The Women's Pavilion does not come within the category of unanticipated attractions to our new locality, for that was an early assured boon not to be lightly esteemed. One or two members of our Board were so thoughtless and injudicious as to speak of it *outside* as the moving incentive to relinquish our first locality. As our

official relations are soon to terminate, and it being the first and only instance wherein an important family secret has been revealed, we deem this reference to it the only needful monition. Unanimity of thought and action in our Board has been one of the pleasant recollections of the past two years. We boast of never having cast a vote that was not unanimous. Had there been occasion to call the yeas and nays upon any question relating to the Women's Pavilion, we are quite sure there would have been no discord.

As was anticipated, the Pavilion and its occupants were good neighbors, and furnished an attractive outlook from the New Jersey balconies.

It was assumed that a larger ratio of our State population would frequent the Exhibition than possibly any other State except Pennsylvania. This expectation was fully realized, and both our location and building admirably met the requirements of the occasion.

The total number of registered names at the "Headquarters" was 106,000, and the largest registry on a single day was, of course, that of "Jersey Day," August 24th, when it numbered 1,796.

Frequent daily estimates were made by those in charge to ascertain as nearly as possible what proportion of the visitors took the time and trouble to register, and it seemed to be fairly assumed that about one in ten, thus indicating a total of not less than one million of visitors, or a daily average of about 6,400. As a matter of course, every State and nation was represented in this mass, attracted thither some by the propensity to follow the crowd, and others by the striking exterior of the building. Of the 106,000 registered names, it was found that about ten per cent. were *not* citizens of New Jersey.

The Commissioners' regulations at some of the State Buildings were more restricted than at ours. In some only their State people were allowed to register. To have en-

forced such a rule in our "Headquarters" would have demanded the services of a "corporal's guard" in constant attendance. The eating of lunches was strictly forbidden in most, if not all, other State Buildings. It was the purpose of our Board, and the ladies as well who had been so instrumental in rendering the building attractive and comfortable, to make every possible concession to enhance the comfort of all for whom the building and its interior arrangements were designed. It was practically, for the time being, on New Jersey soil, which was suggestive of freedom. We therefore liberally provided tables, chairs, settees, verandahs—and even the floors were often substituted for tables in the service of the thousands of guests. As a matter of course, there was not much courtly formality observed in the distribution of these unnumbered courses of edibles. Had the renowned New York caterer, Delmonico, been a daily visitor at our "Headquarters," he would have conceded that he was outdone, at least in variety, but would have failed to discover anything suggestive of amendment or progress in his profession in the special line of serving dishes.

We might have expected less decorum from almost any other jostled assemblage. There seemed to be a predominant consciousness that even the deportment of our people was on exhibition. In one sense, too, it was a *spiritless* crowd, as our capacious tanks and wearied water-carriers sufficiently demonstrated that the "Jersey" preference was for unadulterated Schuylkill.

The "Public Comforts" of this establishment were scarcely excelled by those in another part of the grounds. The wash rooms, cloak rooms, and "spare rooms" were among the essentials found in the Jersey Building. It was one of the notable institutions of the Park, and was as readily found as the Main Building.

It has been a source of much gratification to your Commissioners, during the progress of the Exhibition and since

its close, to hear expressions of unvarying satisfaction with the discharge of such of their duties and responsibilities as had special reference to the State Building.

From what has been said of this establishment, it will be obvious that its construction and maintenance upon such a scale, required a pretty large expenditure of money, and in this connection it is proper to state, that the \$8,911.68 donated from the Women's Fund, referred to in detail elsewhere, was used in "furnishing and maintaining" this building; the cost of the structure was taken from the State Fund as will also appear in its proper place.

The architecture of our Building and its external finish, rendered it one of the most conspicuous in the Park.

It was seldom criticised architecturally but with approval; some of its minor details were not always sanctioned, nor is it ever the case with elaborate designs. The most *distressing* of all the allegations against it was, that it was "too red." This criticism by a non-resident might be tolerated and regarded as inoffensive. But for a citizen of our own State to utter a sentiment tending to depreciate the soil of a large and productive section of our territory, establishes beyond a doubt not only his 'disloyalty,' but his hostility to an important newly developed State industry.

Why, the predominant color of the exterior of our Building was not the result of choice, but the product of nature, and "mother earth" is alone responsible for it. While this announcement will no doubt silence *the* individual critic referred to and thus shield him from indictment, it will nevertheless vindicate the Commissioners and afford relief to the long suffering building committee, unduly criticized.

As a State exhibit entered for competition our Building received the award that will be found at the head of the list of awards further along in this report, and we are not alone in thinking it worthily bestowed.

The sales of both public and private buildings in the

Park have been at surprisingly low figures compared with their cost. All the State Buildings were disposed of at low rates, but we are glad to announce that ours sold for nearly three times as much as either of the others, and was purchased for re-erection substantially in its original form at Haddonfield, Camden county, and for the purposes of a Town Hall.

It is a beautiful structure, and so long as it stands will be a historical building, and thousands of Jersey men and women will cherish pleasant recollections of State hospitality dispensed with a liberal hand under its Jersey-tiled gables. Carl Pfeiffer, of New York, was the architect, and John Evans, of Trenton, the builder.

STATE DAYS: SUGGESTED BY NEW JERSEY.

But we have more to note of our State agency in what transpired to enhance the public interest in the Exhibition. We have already stated that to her belongs the credit of originating the popular State Building scheme. We now assume the credit of originating State Days also. We have no knowledge of a suggestion upon the subject prior to its having been considered by ourselves. It was a somewhat novel proposition, but at once commended itself and was readily seized upon by other States. It seemed to infuse a new spirit of State emulation, and was appropriately made the occasion of a sort of supplementary celebration, participated in by most of those States coeval with the nation.

JERSEY DAY AT THE CENTENNIAL.

One attractive feature of the day was to be historical addresses relating to the States respectively. The Governors were to announce by proclamation the days selected, and invite a general participation on the part of their citizens.

August 24th was the day chosen by Governor Bedle and the State Commissioners for the New Jersey reunion at the Centennial. The Governor, conjointly with the Commissioners, issued an announcement of the day, and called upon the authorities of the cities and towns to interest themselves, with the view to secure a very general representation at the Governor's reception at the State Building, which was to be one of the prominent ceremonies of the day.

Public meetings were held in the cities, where committees were appointed to make needful arrangements with railroad companies for cheap transportation. It was the signal for an outpouring of the people from the remotest corners of the State. Much credit is due to the railroad companies for the liberal concessions made to attract the masses to participate in the New Jersey festival at Fairmount Park. It was estimated that not less than thirty thousand of our own State's people gathered to take part in the ceremonies of the day. The Hon. Abram Browning, of Camden, had been selected by Governor Bedle to prepare and deliver the address.

The Centennial authorities and the citizens of Philadelphia were alive and anxious that the first State Day should be a success. A reception committee, composed of New Jersey residents in Philadelphia, had been appointed, consisting of E. C. Knight, chairman; the Hon. Morton McMichael, Richard J. Dobbins, Hon. B. H. Brewster, Dr. Joseph Pancoast, Samuel Bishop, S. E. Stokes, J. B. Lippincott, Furman Shephard, Edward Browning, James H. Stevenson, John W. Stokes, Louis A. Godey, Dr. E. C. Jayne, and Joseph H. Chapman.

At eleven o'clock the above committee met Governor Bedle and a large party of his friends at the Centennial railroad depot, when the chairman, E. C. Knight, addressed the Governor as follows: "On behalf of the citizens of Philadelphia, we greet you and your friends and all the

visitors from New Jersey to the Centennial with a hearty welcome. New Jersey, for her liberal subscription and many other good acts, is entitled to our warmest thanks and consideration."

Governor Bedle responded by an expression of his hearty thanks, in the name of the people and Commonwealth he represented, for the welcome thus extended. He said the day was a proud one for Jersey and Jerseymen, and would be ever memorable to them, and expressed his special gratification in being received on the part of the city of Philadelphia by a delegation of gentlemen, of whom, as he had been informed, all were native Jerseymen.

At the conclusion of the outside reception, the committee led the Governor and party across the avenue into the grounds, where they were met by members of the Board of Finance, with President John Welsh at the head, President J. R. Hawley and Director-General Goshorn, and the New Jersey Board of Commissioners.

Headed by the First Brigade Band, of forty-five pieces, the Governor was escorted, by the above gentlemen, to the Judges' Hall to hear the address of Mr. Abram Browning. A large number of prominent citizens of New Jersey, together with all the State officers, members of the State Senate and House of Assembly, with many others already within the grounds, joined the procession, and, for the first time, Judges' Hall was crowded to overflowing.

At twelve o'clock Governor Bedle called the assemblage to order, and stated that under the arrangement of the Commissioners for the delivery of historical addresses on these State Days, Mr. Browning had been appointed on behalf of New Jersey. That gentleman he now had the pleasure to introduce as a "Jerseyman through and through, and one who, no doubt, would do justice to the great subject which brought him here to day."

MR. BROWNING'S ADDRESS.

Your Excellency,

Fellow citizens of New Jersey:

The growth of New Jersey in population and wealth, during the one hundred years of her existence as a State, will compare favorably with that of her twelve sister States; with which, on the memorable Fourth day of July, seventeen hundred and seventy-six, she commenced her career.

On that day, now consecrated to civil liberty—in this country, at least—with a heroism almost without a parallel, she joined her sister colonies in the solemn Declaration, which absolved them from all allegiance to the British Crown, and proclaimed them “*free and independent States.*” With equal heroism, through a war of seven years, they made that declaration good.

The names of New Jersey's representatives—Stockton, Witherspoon, Hopkinson, Hart, and Clark—are to that august declaration, which now challenges and receives the admiration of the civilized world. With them she vowed. With them she bled. Her sons and soil bared their bosoms to the strife. The fields of Trenton, Princeton, and Monmouth were the hinges of the Revolution. On them dependency turned to hope. There courage took, a-fresh, the energy and endurance which crowned with laurels that eventful contest. We point to those names, and to those fields, with pride. They are ours.

But I am not here to praise New Jersey. Much less to celebrate our Nation's birthday. That has been already done—and well done—at the appropriate time, by her chosen poets, statesmen, and orators. My simple mission, as one of her humblest sons, is to direct your attention to what New Jersey was and what she is—to the results of a century. To enlighten the pathway of the future, by turn-

ing to the past. To-day is the prophet of to-morrow. Because the sun of to-day, for thousands of years, has dispelled the darkness of each preceding night, we know that it will rise again to-morrow; that because seed-time and harvest have always come and gone with each succeeding year they will come and go again. We know the future but by the past. So the existence and progress of a State, under an established constitutional form of government, based on the intelligence and will of a free people, for the first century of its existence, is the proper lesson for the next. I turn to that lesson. Before doing so, however, permit me, as a stand-point, to direct your attention to the condition of New Jersey one hundred years ago.

SETTLEMENT OF NEW JERSEY.

In 1497—five years after the discovery of America—that part of North America situate between the northerly boundary of Florida and the river St. Croix, fronting upon the Atlantic Ocean, and extending to the valley of the Mississippi, was discovered by Sebastian Cabot, sailing under Henry VII. That discovery enured to the benefit of England. Hence the English title to that territory, of which New Jersey is a part.

By reason of the subsequent civil wars, but little was done by England during the next century and a half towards colonizing her possessions in America. Meanwhile the Dutch laid claim to, and had taken possession of, that part of New Jersey lying on the Hudson, north of New York; and, in connection with the Swedes, had taken possession also of the lands on the Delaware from Cohansey to Gloucester.

In 1664, shortly after the accession of Charles II to the throne of England, he conveyed, with other lands, the territory constituting New Jersey, with full powers of govern-

ment, to his brother James, Duke of York; and about that time he captured the Dutch and Swedes along the Hudson and Delaware rivers. Within a few months after the conveyance to the Duke, he, the Duke, conveyed New Jersey, with full powers of government jointly to two English noblemen, Sir John Berkeley and Sir George Carteret.

Under those Lords, and the proprietors to whom they conveyed, New Jersey was settled as an English colony, mostly by direct emigration from England, but in part by English emigrants from the New England colonies, which had been previously established. The Dutch and Swedes remained, and had their titles confirmed for the lands in their possession. These, with the emigrants from England and New England, according to Smith's history, published in 1765, made up a population in that year of *one hundred thousand*. Computing for the ensuing eleven years a probable increase of 25,000, and we have on the fourth day of July, 1776, as the total population of New Jersey *one hundred and twenty-five thousand*.

POPULATION.

I now proceed to the growth of New Jersey in population during the first one hundred years of her existence, commencing with the 125,000.

There was no census of New Jersey until 1790, fourteen years after the Declaration of Independence, seven years after the close of the war, and three years after the adoption of the Constitution of the United States. This was a national census, made under the authority of Congress, of all the States. Similar censuses, at intervals of ten years have since been taken. The last, or *ninth*, in 1870. I rely on these, and on an intermediate State census of New Jersey, made in 1875.

It may be well to make an intermediate rest, mark the

growth of our State at the close of the first half century. We can then compare the growth of the first fifty years with that of the second, its increase or decline.

In 1820, according to the census of that year, the population of New Jersey was 277,426. In 1830 it was 320,893. The increase in the intermediate ten years had been between *fifteen* and *sixteen* per cent. Estimating from this an increase of *eight* per cent. for the six years between 1820 and 1826 the population of New Jersey at the close of the first fifty years of her existence was *three hundred thousand*. This shows an increase during the first half century, of 175,000, or *one hundred and forty per cent.*

In 1875, one year before the close of the second half century, the population of New Jersey was 1,019,413. Add *one and one-fifth per cent.* for the ensuing year, and we have at the close of the second half century a population of *one million two hundred thousand*; showing an increase of *900,000* during the last fifty years; or *three hundred per cent.* instead of *one hundred and forty per cent.* during the preceding period of fifty years.

In the first century, then, of her existence, New Jersey grew from 125,000 to 1,200,000. Her population to-day is nearly, if not quite, *ten* times what it was in 1776. At this rate of increase, during the coming century, New Jersey will contain on the fourth day of July, 1976, *twelve millions* of people. Nearly equal to *one-third* of the entire population of the United States in 1870, and more than the aggregate populations of England, Ireland and Scotland one hundred years ago.

The *location* of New Jersey, between the two great cities of the Union, favors her continued growth. It was not, however, so considered at the first. Those cities drew, largely, on the talent and enterprise of the State. Her bright young men, especially, sought wealth and position in them. This led the philosophic, but facetious, Dr. Franklin, at his

neighbor's expense to perpetrate the witticism, *that New Jersey resembled a beer barrel, tapped at both ends, with all the live beer running into Philadelphia and New York.*

This may have been so then; but the reverse is true now. They are paying us back, with usury. "*The taps are spiled.*" The overflow is from the cities, into the State. Their wealth and refinement are fast building rival cities on our shores; and ornamenting our hills and valleys, with palatial residences and sloping lawns. And our whole sea coast, from Sandy Hook to Cape May, is becoming brilliant, with hotels and cottages, for summer resort.

The growth of New Jersey in population compares favorably with that of the other twelve original States.

In making the comparison I assume that, at the Declaration of Independence, the population of the *thirteen* States was *two and a-half millions*. In verification of this, fourteen years afterwards, according to the census of 1790, their population was a fraction less than four millions.

In 1776, as already stated, New Jersey had a population of 125,000; leaving for the other twelve States 2,375,000. In 1870, ninety-four years after, the population of New Jersey had increased to 906,096; while that of the others had become 15,992,096. New Jersey had increased her population *seven and a quarter times*; while the other twelve States had increased theirs but *six and three-quarter times*. And this notwithstanding the area of the twelve States *is some forty times greater than that of New Jersey.*

While New Jersey has thus grown in population—more than keeping pace with her twelve sister States—the United States, as a whole, have grown much more. From thirteen States, skirted along the Atlantic, they have become thirty-eight States, stretching across the continent to the Pacific. From a population of two and a-half millions, their population has become forty millions—sixteen times their original. At this rate of increase, a century hence the United

States will contain a population of *six hundred and forty millions*—more than half the present population of the entire globe!

WEALTH.

Next to the population, I pass to the wealth of New Jersey. To compare it now with what it was; and its present wealth with that of all the other States. In turning to this, the first thing which presents itself is the *homogeneity* of our country. Practically, we have a common tongue, a common system of laws, a common religion free to all, and a common origin, except those of African descent, who need not be considered in this connection. The utmost freedom of inter-State trade and travel, of removal from State to State, and of enjoying in each State the rights, privileges and immunities of that State, prevails everywhere. No restraint on human action but the restraints of law, which are alike to all. Every one is free to come, and go, and act as he pleases, regarding only the law. All the avenues to wealth, welfare, and honor are open to all. Success depends mainly on the intellect, enterprise, energy and thrift of each individual. Every man is the architect of his own fortune; and it is distributed almost every generation. In such a country no considerable difference between the wealth of the people of one State and those of another can be expected, except what results from *local advantages*.

The first step towards determining the difference in the wealth of the people of New Jersey now and one hundred years ago, is to ascertain what they were worth then. This I have been unable to accomplish beyond a reasonable approximation, sufficiently near, perhaps, for the occasion.

New Jersey has an area of about eight thousand square miles—equal to five million acres. These lands, with the improvements upon them, must have been the main wealth

of the colonists a century ago. No public assessment, or appraisal of their value, so far as I know, had been made. The most reliable approach to it, that I have found, is in a colonial statute of 1769—six years before the Revolution.

In order to liquidate New Jersey's quota of the expenses of the then late French War, by annual payments of *forty thousand dollars*, currency, to be assessed mainly on the lands of the several counties, it was, in substance, enacted "that all profitable tracts of land, held by deed, patent, or survey, whereon an improvement is made, the whole tract shall be valued, at the discretion of the assessors in each respective county of this colony," not exceeding one dollar per acre, and not less than twenty-five cents. This, as I understand the act, was to be an assessment on the land itself, exclusive of improvements upon it.

The members of the colonial legislature were, necessarily, freeholders; and they were probably large landed proprietors. Consequently, they were familiar with the value of lands in the colony. The maximum value of the statute—one dollar per acre—seems very low; probably much below the real value of the cultivated portions of the land. But it is not unreasonable to assume that the highest value named by the legislature was a fair average of the whole, good and bad, irrespective of the improvements. I have so estimated it.

My estimate, then, is 5,000,000 acres at \$1 per acre,	\$5,000,000
Improvements, including towns and villages,	5,000,000
Personalty, now less than half, then certainly not more,	5,000,000

Making the total value of real and personal estate,	\$15,000,000
---	--------------

The population of New Jersey then (1776) was one hundred and twenty-five thousand. This total wealth, dis-

tributed, would be \$120 for each inhabitant; or \$600 for each family of five persons.

According to the compendium of the United States census of 1870, the *true* value of the real and personal property of the people of New Jersey was then (omitting fractions) *nine hundred and forty-one million* dollars, more than *sixty* times their wealth a century before. Her population has now become 1,200,000; their individual wealth \$800 instead of \$120; and for each family of five persons \$4,000, instead of \$600.

In making these estimates of the present individual and family wealth of New Jersey, it struck me that my *figures* were much too high. But, upon a little cyphering, I discovered that the reputed fortune of fifty million dollars of the late Alexander T. Stewart, of New York, distributed into shares of \$800 each, would gladden the hearts of *sixty-two thousand five hundred* of the poor of that city; or, distributed into family shares of \$4,000, would make *twelve thousand five hundred* happy families. I surrendered to the figures.

"*The now and the then*" somewhat strikingly appears between the expenses of administering justice in New Jersey in ante-revolutionary times and now.

As a general rule, people pay for the *luxuries* of life in proportion to their means. And the people of all nations, at all times, have indulged in the "luxury" of *law suits*. Hence courts of justice and their inseparables, *costs*.

Smith, on page 501 of his History, says: "The present justices of the Supreme Court are Frederick Smyth, Esq., chief justice; salary one hundred and fifty pounds per annum. Charles Read, Esq., second justice; salary fifty pounds per annum. John Berrian, Esq., third justice; salary fifty pounds per annum."

This was in 1765. The combined fixed salaries of the three justices of the Supreme Court (reduced to Jersey currency) were *six hundred and sixty-seven dollars*. The same

court, still existing, has now nine justices, instead of three. Their combined fixed salaries are forty-five thousand two hundred dollars, with perquisites which increase that sum to *sixty thousand dollars*.

In wealth, New Jersey has kept pace with her sister States. Taking the compendium of the census of 1870, the *true* value of all the property, real and personal, of the people of the United States was, in round numbers, *thirty thousand million dollars*.

This estimate is probably too high. It was made up by increasing the assessed value from *fourteen* thousand million dollars to that sum, more than doubling the assessed value. But I take the compendium as substantially correct. Thirty thousand millions distributed equally to forty millions of people would give to each *seven hundred and fifty dollars*. The *per capita* shares of the people of New Jersey, in a distribution of their own wealth, as I have already stated, is *eight hundred dollars*. The difference in their favor is 6.7 per cent.

SOIL.

In size, New Jersey is the *thirty-third* State of the Union. Thirty-two are each, except Massachusetts, very much larger. The five smaller are Rhode Island, Delaware, Vermont, New Hampshire and Connecticut. The area of New Jersey has usually been stated at *eight thousand* square miles, or 5,000,000 acres. But Prof. Cook, by accurate computation, makes it 7,576 square miles. This would be 4,848,640 acres. Deduct one-twentieth for water, and there will remain for land proper, 4,606,208 acres—say *four million six hundred thousand acres*.

The products of agriculture are essentials of wealth, civilization and refinement. It is the foundation industry. Its products enter into almost all the other industries. Hence

it is that a large portion of the people of this State, and of this country, and of the civilized world, is engaged in agriculture. According to the last census, *six millions* of the people of the United States, nearly one-sixth, were engaged in the business of agriculture. I pass to it as the leading industry.

The *soil* of New Jersey, taken as a whole, has always been regarded, and probably is, less fertile than that of the adjacent States. "Jersey red-shale" and "Jersey sands" are standing jests. Our neighbors used to think, and many still, that a cautious toad (which feeds on vapor) would wisely have its life insured against death by starvation before venturing across those Jersey *deserts*. But these jests, like Dr. Franklin's beer barrel, have become pointless—mere pleasantries. We plead "guilty" to them as we do to the *charges of growing peaches and pretty girls*.

Our location between the great cities is fast compensating for the leanness of our soil. It is, in fact, admirably adapted to the growth of fruits and vegetables, and is fast becoming a fruit and vegetable garden for New York and Philadelphia. More profitable than deeper soils with other culture; the right thing in the right place.

Omitting fractions, by the census of 1870 the farm lands of the United States, amounting to 408,000,000 acres, are valued at \$9,263,000,000, and their annual product at \$2,448,000,000. The average value is twenty-three dollars, and their annual product is six dollars per acre.

New Jersey farms head the list. Her three million acres in farms (nearly two-thirds the whole) are valued at \$258,000,000; their annual products at \$43,000,000. In value, therefore, eighty-six dollars per acre, nearly four times the general average; and in product fourteen dollars and thirty cents, more than double the general average.

It is thus proved that, either by superior culture or local advantages, or both, the farms of New Jersey are largely more valuable and productive than those of the other States.

MINES.

Nearly allied to agriculture, is the business, or industry, of mining. The products of each are derived directly from the earth. Those of agriculture, from the soil or surface; of mining, from beneath. Agricultural productions are *creations*, or growths of vegetables, by culture of the soil. The business of mining is the procurement of metals, minerals, stones, and other valuable substances taken from the bowels of the earth, which by providential care have been treasured up or stored away as essentials to the wealth, civilization and welfare of mankind.

In turning to this branch of industry, as one of the leading sources of wealth and prosperity, I take leave to recall attention to the facts that, in 1870, the estimated total wealth of the people of the United States was *thirty thousand million dollars*, and that nine thousand three hundred million dollars of that sum (nearly one-third) were invested in farming. This one-third of the national wealth was the capital invested in agriculture alone. The remaining two-thirds constituted the combined capitals of all the other industries.

At the same time, the whole capital invested in mining was *two hundred and twenty-two million four hundred thousand dollars*—only three-fourths of one per cent. of the national wealth. While, therefore, one dollar out of every three dollars was devoted to agriculture, only one in one hundred and twenty-five dollars was devoted to mining. In short, the capital invested in agriculture was *forty-two* times that invested in mining. And yet while the annual product of agriculture was estimated at \$2,448,000,000 only *twenty-six* per cent of its capital, that of mining amounted to \$153,000,000—*sixty-nine* per cent. of its capital.

From data given in the census of 1870, and by charging to the business of mining ten per cent. on the capital in-

vested, or, which is the same thing, adding that interest, as an item of expense, to the wages paid and materials used, I estimate the cost of mining operations in that year at \$111,902,435. The product, by the census, was estimated at \$152,598,994. The difference—say *forty-one millions*—is the profits of the business, amounting to about *eighteen* per cent. of the capital invested. It was, therefore, a profitable business. I have no data from which to compute the profits of agriculture.

Considering the industry of mining in reference to the several States of the Union, exclusive of the territories, Pennsylvania, Maryland, California and Nevada may be regarded as the four leading States. In 1870 the capital invested in mining in Pennsylvania was \$85,000,000—*thirty-nine* per cent. of the combined mining capitals of all the States. Maryland had a capital of \$25,370,000—*twelve* per cent.; California of \$20,000,000—*nine* per cent.; and Nevada of \$32,250,000—*fifteen* per cent. The aggregate mining capitals of these four States was one hundred and sixty-three millions—three-fourths of the entire mining capital, and leaving but *fifty-three millions* for all the other States, exclusive of the territories. The chief products of the mines in Pennsylvania and Maryland were coal and iron. In the former, after charging ten per cent. on her capital, the business made a profit of *twenty-seven* per cent. In the latter, it fell *four* per cent. below the interest charged. In California and Nevada, the principal products were the precious metals. The business, in the former, cleared a profit of *five* per cent. over interest charged on capital; and, in the latter, sixteen per cent.

Of the thirty-four other States, three, Mississippi, Arkansas and Texas, had no capital invested in mining; and fifteen others, Alabama, Delaware, Georgia, Kansas, Louisiana, Minnesota, Nebraska, New Hampshire, Oregon, Rhode Island, South Carolina and Texas, had, together, a capital

of only \$1,229,310. The average mining capital of these twelve States was \$102,442. The lowest two were Louisiana, *one hundred dollars*, and Texas, *one hundred and fifty*. The highest two were Oregon, with a mining capital of \$321,520, and New Hampshire, with one of \$203,450. None had a capital invested in mining sufficient to constitute it a leading industry of the State.

The remaining *nineteen* States had each a mining capital of more than half a million, viz.:

Michigan of	\$9,962,874
Ohio of	9,017,197
Illinois of	4,814,123
New York of	4,696,091
Missouri of	3,489,254
Colorado of	2,835,835
West Virginia of	2,554,499
New Jersey of	2,501,700
Vermont of	2,494,700
North Carolina of	1,853,100
Connecticut of	1,496,100
Virginia of	1,113,000
Tennessee of	944,829
Massachusetts of	944,250
Kentucky of	761,450
Iowa of	756,224
Wisconsin of	737,728
Indiana of	610,692
Maine of	597,768
	<hr/>
	\$52,181,414

Amounting in the aggregate (omitting fractions) to *fifty-two millions*, and averaging a capital of *two million seven hundred thousand dollars*.

While the capital invested in mining in New Jersey is,

in actual amount, the *eighth* in the nineteen States of which I am now speaking, and the *twelfth* of all the States of the Union; yet, in the ratio of its territory, it is not only the *first* of the nineteen States, but of all the States of the Union, except Pennsylvania and Maryland.

Adhering to the census statistics of 1870, and charging to expenses ten per cent. on the capital invested, the net profits of mining throughout the country, simply as an industry, were *eighteen* per cent., as I have already stated. At the same time the profits in New Jersey were *twenty-eight* per cent.—ten per cent. over the general average. And confining the estimate of profits to the twenty-three States in which mining constitutes a leading industry, New Jersey is the *seventh* on the list. The six States which yielded higher profits in that year are Illinois, West Virginia, Indiana, Massachusetts, Tennessee and Iowa.

I now pass to manufactures.

MANUFACTURES.

Agriculture and mining furnish materials for manufacture. The manufacturer takes the crude products grown on, or delved from, the earth, and smelts, refines, moulds and fashions them for use. The flax, the hemp, the cotton and the silk; and the ores, the minerals, and the unshapen metals and stones—worthless in their crude condition—are taken by the hand of industry and fashioned into the most costly and useful fabrics, and into the most elegant and necessary ornaments and implements which minister to the tastes and wants, the comforts and conveniences, of wealth, civilization and refinement, the use of which is the dividing line between the civilized and savage man. This fashioning of things constitutes the industry of manufactures. It begins with civilization, and marks its progress. The wealth that it bestows is the difference between the value of the crude ore and the package of finest cutlery made from it.

I have already stated that the aggregated wealth of the people of the United States in 1870 was *thirty thousand million dollars*, the one-third of which was devoted to agriculture alone. Manufactures are next in importance.

By the census of that year, it appears that the sum of all the capital invested in more than two hundred and fifty thousand manufacturing establishments in this country, and employing over *two million* people, amounted to \$2,118,208,769. This industry, therefore, gives employment to the *one-twentieth* of all the men, women and children in the United States; and requires for its prosecution more than *one-fourteenth* of their entire wealth. Its products are estimated at \$4,232,325,442—more than twice the amount of capital invested in it, and more than *two thousand dollars for each employee* engaged in it.

There is no estimate, in the compendium of the census, of the net *profits* of this industry. It furnishes data, however, from which an approximate estimate may be made. It gives the capital employed, the wages paid, the materials used, and the value of the products. The wages and materials, I suppose, cover all expenses except the use of the capital. From these, I estimate the profits, as I did of mining, by charging, as a part of the expenses, *ten per cent.* on the capital. The interest, the wages, and the materials make up the cost. The difference between their sum and the value of the products constitute the profits of the business. Thus:

Total products, as per census,	\$4,232,325,442
Ten per cent. interest on capital, \$211,820,877	
Total wages, as per census,	775,584,343
Materials used,	2,488,427,242
	<hr/>
Making cost, or expenses of manufacture,	3,475,832,462
	<hr/>
Leaving for net profits,	\$756,492,980

This shows a net profit for the industry alone of *thirty-six* per cent. on the capital invested, over ten per cent. interest allowed for its use; or *forty-six* per cent. for the use of the capital.

Seven hundred and fifty-six million dollars is, by this computation, the net amount added to the national income by *two million* operatives, or three hundred and seventy-eight dollars by each man, woman and child employed. This addition to the income, by this branch of industry alone, is equal to *two and one-half* per cent. on the whole national wealth.

In looking more particularly to the thirty-eight States in reference to the industry of manufactures, properly so called, it seems to me they should be divided into agricultural and manufacturing States; and those devoted mainly to agriculture excluded from consideration. When the capitals invested are the small, individual capitals of tradesmen and mechanics, their business is more properly that of a mechanic or tradesman—not a manufacturer. In speaking of manufactures as a national industry, we refer to factories and other establishments requiring for their erection and conduct large capital and operated by labor and machinery, rather than to the manual labor of individual mechanics. In adopting this division, I exclude from consideration, as agricultural, all the States in which the combined manufacturing capital is less than *ten million dollars*.

By this division I retain the following *twenty-six* States. each of which has a capital invested in manufactures exceeding ten million dollars, viz.:

1. Pennsylvania, capital as per census of 1870,	\$406,821,845
2. New York, “ “	366,994,320
3. Massachusetts, “ “	231,677,862
4. Ohio, “ “	141,923,964

Amount carried forward, \$1,147,417,991

Amount brought forward,		\$1,147,417,991
5. Connecticut, capital as per census of 1870,		95,281,278
6. Illinois, " "		94,368,057
7. Missouri, " "		80,257,244
8. <i>New Jersey</i> , " "		79,606,719
		<hr/>
Capitals of eight States,		\$1,496,931,289
9. Michigan, capital as per census of 1870,		71,712,283
10. Rhode Island, " "		66,557,322
11. Indiana, " "		52,052,425
12. Wisconsin, " "		41,981,872
13. Maine, " "		39,796,190
14. California, " "		39,728,282
15. Maryland, " "		36,483,729
16. New Hampshire, " "		36,023,743
17. Kentucky, " "		29,277,809
18. Iowa, " "		22,420,183
19. Vermont, " "		20,329,637
20. Virginia, " "		18,455,400
21. Louisiana, " "		18,313,974
22. Tennessee, " "		15,595,295
23. Georgia, " "		13,930,125
24. Minnesota, " "		11,993,729
25. West Virginia, " "		11,084,520
26. Delaware, " "		10,839,093
		<hr/>
Total capitals of twenty-six States,		\$2,053,461,910

The manufacturing capitals of these twenty-six States amount to *ninety-seven* per cent. of that in all the States and Territories, leaving for the other twelve and Territories three per cent. only. Pennsylvania, New York, Massachusetts, Ohio, Connecticut, Illinois, Missouri, and New Jersey—the eight States first named—contribute *seventy-three* per cent. of the manufacturing capital of the whole twenty-six,

leaving but *twenty-seven* per cent. for the other sixteen. While New Jersey is but the *seventeenth* in population, she is yet the *eighth* in the amount of capital invested in manufactures. Of the seven States having each a larger capital than New Jersey, six of them have severally populations ranging from one and a half to five times that of hers. Connecticut only is less populous. Touching, therefore, this great branch of industry, our little State, *sandwiched* between the two great States, is not only respectable, but *meat* for both.

There is one branch of manufacture in New Jersey comparatively new and growing in this country, which will justify, I think, particular mention. I refer to the manufacture of silk. In this, our State occupies an advanced position.

It appears by the census of 1870, that but seven States had then any capital invested in this manufacture, with capitals combined amounting to only about six million dollars, viz:

New Jersey capital invested,	\$2,166,500
Pennsylvania "	1,429,000
Connecticut "	1,414,130
New York "	800,500
Massachusetts "	412,000
New Hampshire "	5,000
Vermont "	4,000
<hr/>	
Total,	\$6,231,130

Of this capital, New Jersey had then invested a fraction over one-third; Connecticut and Pennsylvania had each something less than one-fourth, and the remaining portion was held by New York, Massachusetts, New Hampshire and Vermont. The whole number of employees was 6,649, and the total annual product of their manufacture, was \$12,210,-

662; the hands and products of each corresponded with their several capitals.

Since 1870 this industry has seemingly been concentrating itself at Paterson, New Jersey. At least, it has since greatly increased at that place. Omitting fractions, the capital then invested at Paterson in silk manufacture was two millions; in 1875 it was six millions. The number of operatives then was twenty-eight hundred; now eight thousand. In short, in capital, industry and product it has increased in five years at Paterson about three fold.

I have no data at hand which enable me to state the condition of this industry in the other States.

CHURCHES.

While in this country there is no political connection between Church and State, and religious toleration is freely extended to all, yet Christianity is the established religion of the *people* of New Jersey, and also of the United States.

To escape from religious persecution at home, the early emigrants—constituting the foundation of society here—fled to America. They came from Christian Europe as Christian people, not pagans. No people, taken as a whole, ever entertained a firmer belief in, and a higher and holier regard for, the Christian Bible. On the catholic principles of Christianity, they laid broad and deep their civil and religious institutions. Coming to escape *political* persecution for conscience sake, they wisely severed all connection between Church and State; left each to stand alone, side by side, but not united. One for the protection of persons and property; the other for the salvation of the soul.

Churches were, and are, erected, not by taxation or exaction of the State, but by the voluntary contributions of Christian people—each personally on his own conscience, and of his abundance or poverty, depositing his offerings in

the House of the Lord, like good seed sown in good ground, to bring forth fruit in due season; sowed in faith to be reaped in joy. Churches thus obtained are and must be truthful reflections of the character and wealth of a people.

Smith, in his history published in 1765, particularly enumerates the church edifices of each county and of each sect. He made the number *one hundred and sixty-nine*; but says nothing of their cost or value. One for every six hundred inhabitants; sufficient in number. Their value can only be conjectured.

From the very few that remained intact within the memory of our oldest people—I know of but one now standing, St. Mary's, Colestown—and from the known number and condition of the colonists, I assume that \$3,000 for building and land would be a very liberal average. This would make their total value a *half-million of dollars*, an average of *four* dollars for each inhabitant, and twenty-five dollars for each family of five persons.

According to the census of 1870, there were then 1,384 church edifices in New Jersey, valued at \$18,347,150. The average of each church was \$13,379; for each inhabitant, \$20; and for each family of five persons, \$100. And between 1765 and 1870 the number of church edifices had increased eight-fold, their average value four-fold, their gross value thirty-six-fold, and their *per capita* value five-fold.

This remarkable growth in the number and value of churches in New Jersey compares favorably with those of the other original States. But one, Connecticut, has a higher *per capita* value. The valuation of all the church property in the United States amounts to an average value of only \$9.20 for each individual—less than *one-half* that of New Jersey.

COMMON SCHOOLS.

The importance of common school education to the people of this country cannot easily be over-estimated. The people are sovereign. They govern as one man by the election and appointment of rulers. The ballot is the tongue of the people. Their will thus declared according to the constitutions and laws is supreme. It admits of no appeal. The Chief Magistrate of the nation and all inferior officers are but their appointees. These appointments cannot be wisely made by the ignorant and the lawless. Intelligence and virtue are essential. By common consent, therefore, a common school system, more or less complete, now exists in every State of the Union. Our whole community—here, in every State, everywhere—is alive to its importance. Their actions attest their sincerity.

The *true* value of all the property of the people of the United States, according to the estimate of the census of 1870, was a small fraction over \$30,000,000,000. This was our national capital. Safely invested at four per cent., clear of all taxes and expenses, the national income would be \$1,200,000,000. In that year the several States, through their common school organizations, raised for common school purposes, \$81,277,686—a fraction less than seven per cent. of the entire national income. *That is, the people of the United States contribute seven per cent. of their entire income to common school education alone.*

This is the more remarkable when considered in connection with the fact that the number of children of proper ages for attending school was *fourteen* millions, of whom *eight* millions were enrolled in the public schools; but that the average daily attendance at those schools was only *four and one-half* millions—less than one-third of the school population. It is obvious, therefore, that only about *one-half* of our children are educated at the public schools. The

residue are taught at other schools, seminaries and colleges, or not at all.

What a magnificent charity is here ! This great nation, considered as a whole, annually raises by voluntary taxation of her citizens and contributes an amount equal to seven per cent. of the entire net income of their property for the education of the children of the poor.

Except in the New England States—and mainly so in them—this whole system of common school education has been established and grown to its present dimensions within the last *fifty* years.

In 1818 the Legislature of New Jersey applied certain State securities, amounting to some fifty or sixty thousand dollars, to the creation of a *Fund for the support of Free Schools*. This was the first legislative step in New Jersey towards common schools. “It is the *first step that tells.*”

With the accumulated interest of this fund, and several liberal appropriations by the State, it had amounted, in 1829, to about one million dollars. It has since largely increased; and to the end that it and all its accumulations should forever remain and be sacredly devoted to its object, the revised Constitution of 1844 provides that: “The fund for the support of free schools, and all money, stock, and other property, which may hereafter be appropriated for that purpose, or received into the treasury under the provision of any law heretofore passed to augment the said fund, shall be securely invested and remain a perpetual fund; and the income thereof, except so much as it may be judged expedient to apply to an increase of the capital, shall be annually appropriated to the support of public schools, for the equal benefit of all the people of State.” It will remain secured by this constitutional guaranty. *Esto perpetua.*

I was a member of the convention which revised the constitution, and my recollection is—although not entirely

certain—that for this guaranty New Jersey is indebted to the late Mr. Justice Field, who was also a member; and, I think, submitted that clause of the constitution to the convention.

In 1829 the Legislature passed the first act “to establish common schools.” It simply directed that the trustees of the school fund should distribute annually to the several counties, and through them, to the townships, *twenty* thousand dollars of its interest; which, with an amount not exceeding their several quotas of the interest, the townships were *authorized* (not required) to raise by taxation, and appropriate to the support of common schools.

This act is the basis of common school legislation in New Jersey; which, by frequent supplements and substitutes, led finally to the act of 1867, “to establish a system of public instruction,” and to the supplement of 1871. These acts contain enlarged and compulsory powers of taxation for common school education; under which, by taxation and from the interest of the school fund, the annual income for the support of common schools is raised. They constitute our present common school system.

According to the report of the Commissioners on Education to the Secretary of the Interior, in 1874, the State of New Jersey, with a population of one million (omitting fractions) had 230,000 children between six and sixteen years old. Of these 186,000 were enrolled in the public schools; which, during that year, were kept open on an average, 192 days; and had an average daily attendance of 96,000 scholars. Her total wealth was \$941,000,000, and during that year she contributed \$2,300,000 to common school education, and had common school property of the value of \$6,600,000.

Assuming these statistics to be substantially accurate, I deduce the following results:

First—That she educated in common schools forty-two

per cent. of her whole school population, and fifty-two per cent. of the number enrolled; and

Second—That for this education she contributed more than *six* per cent. of the net income of the value of the property, real and personal, of all her citizens, invested at four per cent., clear of expenses and taxes.

These results are about the same as the results of the common school systems of all the States, in reference to their entire population and wealth, as I have already stated. Like systems are, therefore, everywhere producing like results.

To be more particular: Upon a carefully prepared *per capita* list of the annual contributions of the several States to common school education, and of the values of common school property in the several States, I find that New Jersey stands number thirteen on the *contribution* list, and number eleven on the *property* list. Twelve States are above her, and twenty-five below. She has not been *rash*, nor yet *slow*, in well-doing. She was not the first, by any means, to abstract, by taxation, the property of one for the use of another. She stood long and firm in the *ancient way* that private property was sacred, except for actual public use, and then only upon just compensation to the *owner*, and not to the *public*. At length yielding to the *necessity* demanded by our peculiar institutions, she consented, on conviction, to make this great *public charity* the exception which proves the rule.

At the conclusion of the address, Mr. S. C. Brown, President of the State Board, invited the vast assemblage to visit the New Jersey State Building and take part in the Governor's reception ceremonies, which would take place immediately.

A long line was formed, at the head of which was the band and the State Commissioners, who conducted Governor Bedle, Governor Hartranft, General J. R. Hawley, Pre-

sident John Welsh, Director-General Goshorn ; the orator of the day, Hon. Abram Browning, ex-Governors Parker and Newell, ex-Senator Stockton, the State officers, members of the State Senate and House of Assembly, with hundreds of other prominent citizens, up Belmont avenue to the State Building, the rendezvous for thousands of Jersey men during the day, and the "Headquarters" of the State officials and visitors from the State throughout the Exhibition season. From every gable and from the lofty tower of this old-fashioned red-tiled roof flaunted the State and national flags, in harmony with similar star and stripe decorations upon the surrounding buildings.

Belmont avenue, from Judges' Hall to the Jersey Building, was literally taken possession of by those who were in no small degree elated with the successful inauguration by their irrepressible State, of "State Days" at the Centennial.

The building and its enclosed surroundings were already densely occupied in advance of those who came in solid column from Judges' Hall. The police opened a way to the central hall of the building for the Governor and his party, where Commissioner Brown addressed the Governor as follows :

"It is in entire harmony with the day and occasion for your Excellency to receive from the State Commissioners a few words of welcome to the building which the liberality of the Legislature and the contributions of the citizens of New Jersey have enabled them to erect and maintain upon Centennial ground.

"The Exhibition season is so far advanced, and the uses for which this structure was provided have already, for so many weeks, been enjoyed by the tens of thousands of Jersey men and women who have availed themselves of it, that anything like a formal opening would seem to be untimely.

"The occasion both invites and justifies our saying that,

thanks to the co-operation of her manufacturers, second to none in enterprise, and of her artizans, second to none in skill, we have been able to make an exhibit of the products and resources of our State of which her citizens are justly proud. "Peace hath her victories as well as war," and as New Jersey was neither last nor least in the securing of those victories which makes this year "the American Centennial year," so she is not behind her sisters in the march of civilization. No wonder Jerseymen are proud of Jersey products and Jersey handiwork; is not the whole country studying and praising them daily?

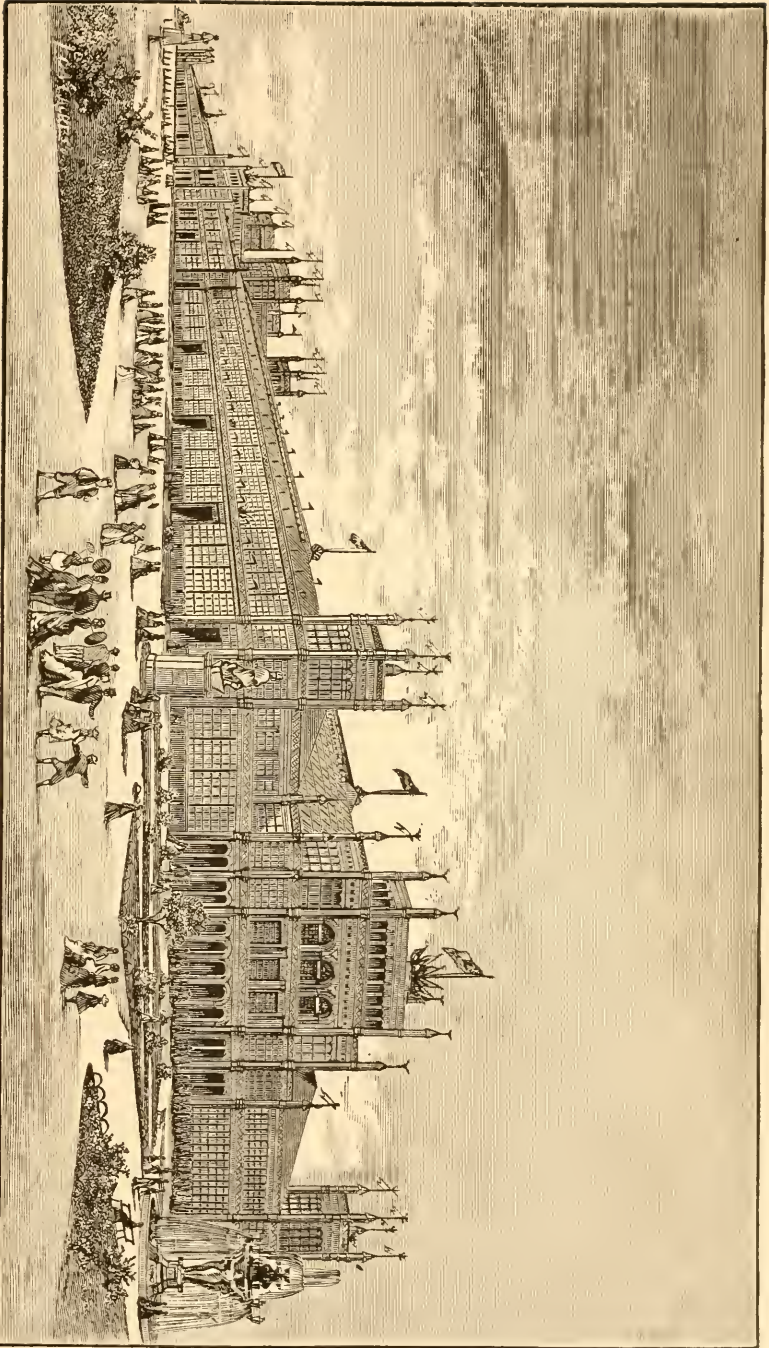
"To an audience of Jerseymen, assembled practically upon New Jersey soil, we might be permitted to say many laudatory things of her, which would not be admissible under less favorable conditions.

"There has been remarkable unanimity in the testimony of two millions and a half of visitors to the Fairmount Exhibition, to its unexampled success in comparison with all that have preceded it; who has heard from either foreign or American voice, but the one verdict?

"It was no easy task for the projectors, and those who have so successfully executed the plans and trusts committed to them, to overcome the obstacles and meet the objections, which at times well nigh destroyed all hopes of the Philadelphia International Exhibition being a success.

"It was at this stage of the enterprise that the friendly interest which had been awakened in our State in its behalf, culminated in a legislative stock subscription of one hundred thousand dollars. This, the first State appropriation, for Centennial purposes, imparted new courage to the Commissioners, and no doubt had its influence upon other States and communities, until contributions from public and private sources, removed all doubts of ultimate success.

"Such a timely and munificent subscription was scarcely anticipated from our little six by eight Jersey, and this ren-



MAIN BUILDING.

dered the action of our Legislature doubly electrifying in its consequences. The Government Commissioners and the Finance Board have never ceased to entertain grateful recollections for the prompt and substantial aid thus opportunely afforded, and it is the merest justice to say that if our service under your Commission has been at once enjoyable and successful, it is largely due to the great ability, constant kindness and cordial furthering of our designs on the part of the Director General Goshorn, the President, General Hawley, Hon. John Welsh, and their associates in office. For this no State Commission owes them and certainly none renders them heartier acknowledgements.

“On two or three occasions this summer our State has displayed on this avenue and around this building, in compact masses, thousands of her operatives, representing the magnitude of some of her individual manufacturing enterprises.

“To-day’s spectacle is other and even better. We come not with phalanxes of Singer and Clark legions of noble men and women. To-day the old State is gathering her children from near and far, and they are more and better than their handiwork. Americans first, we are Jersey men next; and therein we rejoice! Long live the State and all who serve her worthily.

“I conclude by offering your Excellency and all Jersey men a hearty welcome to the enjoyment of what is already yours and theirs to enjoy.”

Governor Bedle, in response, referring to their reception in Philadelphia by native Jersey men, said:

“That wheresoever Jersey men are found throughout the country, they are found united together by a common bond, and he would venture the assertion that among the people of no State in the Union was there a more united feeling than that which exists among Jersey men. (Applause.) If, however, we indulge to-day in a little pride, it is not be-

cause we want to appear 'puffed up,' but it is because we experience to-day a little generous, genuine pride, and we may be pardoned for that. We have heard from Mr. Browning to-day of the progress of New Jersey, and I am not here to enter upon that subject, but I do want to say that so far as the educational system of New Jersey is concerned, and so far as the practical workings of that system are concerned, we acknowledge no superior. The intelligence of her people is most noticeable, but above all, and it is that characteristic which I like best, there is the good, solid, conservative public sentiment of the State. (Great applause.) Her system of laws jurists will acknowledge is of the best. We have the common-law stock there, and it has been grafted upon until now we have a most excellent practical system, and one under which life and property in New Jersey are safe. (Enthusiasm.) As to the soil of New Jersey, it is not poor and worthless, as has been said, but it is productive. We have there beds of marl, by means of which the soil may be made equal to that of the most valuable soil of the Western prairies. Our manufacturing interest are large. Some of our towns have been built up by them. Look at Newark, for instance. Then, too, our manufactures are various. We can show an infinite variety of specimens of human skill. In ores, New Jersey is blessed with mines of wealth. Then, in geographical location, New Jersey is unexcelled. These are things that are known to us all. We feel a pride in them, and we ought to feel grateful to Almighty God that He has placed our lot in a State such as our own."

The Governor added an allusion to the grandeur and greatness of the Centennial, the greatest Exhibition the world has ever seen, and to the credit and gratitude due to the men who, like John Welsh and Governor Hawley, had given their time, their money, and their energy to build it

up. With the part taken by New Jersey in accomplishing this great success no Jerseyman should feel dissatisfied.

At the conclusion of the Governor's remarks, Mr. Brown said that two of the Centennial Boards were represented upon this occasion. The names of President John Welsh and President J. R. Hawley would soon pass into history. I feel authorized to say that these gentlemen gladly availed themselves of this opportunity by their presence to indicate their high respect for New Jersey and full appreciation of what her authorities and citizens have done for the Centennial.

General Hawley was then introduced. He briefly referred to the liberal contribution of New Jersey in aid of the Centennial, as having been given at a time when the prospects of the undertaking to many seemed dark and discouraging. He spoke of this aid in high appreciation, and then made way for Mr. Welsh, whose faith in the success of the Centennial, he said, under the greatest discouragements, never faltered.

Mr. Welsh, President of the Board of Finance, being next called upon expressed his gratification in meeting so many of his fellow citizens from a State whose great sympathy and material support had been duly appreciated by all friends of the Centennial. He referred his audience to the marvels which surrounded them on every side as likely to prove more entertaining than anything he could say.

The speaking being over, Governor Bedle passed to the front piazza where the crowd could more easily reach him, and for about two hours received the citizens of the State and hundreds of strangers, attracted by the occasion.

At the expiration of the time given to the reception, the Governor and many friends, specially invited, including the Philadelphia Committee, dined at the American Restaurant. The dinner was not an elaborately prepared one, but

the time was quite fast verging towards twilight, and the ceremonies at the table were very informal.

The first toast called Governor Bedle from his seat, who said in response: "New Jersey seems to have spread herself very much, and she is well able to do so, owing to her railroads. We have a perfect network of railroads, because we encouraged them in their infancy. I believe you will all bear me out when I say that we owe to this system our prosperity and wealth, and we are all willing to give to any man or company a right to build railroads in our State, provided he or they can raise the money to pay for the construction, and Philadelphia is necessarily a part of New Jersey, and we meet here with a strong fellow-feeling to celebrate our nation's Centennial." The Governor returned thanks to the committee for bringing the people together under such pleasant auspices, and before resuming his seat he gave as a toast. "The State of Pennsylvania, where the Declaration of Independence was signed."

The toast was received with great applause and the band, stationed in the great dining hall, played "Hail Columbia." Governor Hartranft responded, saying: "I am proud to see Jerseymen around these tables, for you are our own fellow-citizens, and we look upon you as united to all our business, and serving the same interests, and deeply interested in our prosperity. And in speaking of the railroad system of New Jersey I am led to speak of one of our own citizens who has done more than any other to build those iron highways through your State and unite us by these strongest of bonds. Governor Bedle has well said they cover New Jersey as with a network, and they are indeed the source of your great continued prosperity."

This speech was followed with music, the band playing "The Star Spangled Banner."

A few remarks from S. C. Brown complimentary to the city of Philadelphia, brought Furman Shepherd, District

Attorney of that city, to his feet. Mr. S. made a speech of considerable length, in which he said, speaking of "Jersey justice," "we hope to make Philadelphia worthy of comparison with New Jersey in its administration of the law."

Ex-Senator Bettle, of Camden, and one of the New Jersey Commissioners, followed with a few remarks, referring to the presence of E. C. Knight and his connection with important railroad operations in New Jersey. Mr. Knight made a brief speech in acknowledgment of Mr. Bettle's reference to his Delaware and Bound Brook Railroad enterprise, of which he is President.

Hon. Orestes Cleveland, of Jersey City, being called upon said, "Gentlemen of New Jersey and Pennsylvania, I won't detain you but a moment. I am proud of this day and occasion. I think New Jersey deserves some credit for this celebration, for she originated it. Dudley S. Gregory in 1865 suggested that an International Exhibition should be held in 1876. I proposed it to a number of persons from him, and offered the proposition in Congress. It was to be held in New York. When it was decided to hold it here, there was a hitch. When the hopes of the Finance Board were low I cheered its members up, and New Jersey came nobly to the front with her one hundred thousand dollars, giving strength and hope and courage when they were most needed."

Thomas H. Dudley, of Camden, member of the Centennial Finance Board, said that "the Centennial Commissioners had worked very hard, and deserved great credit. They had dark hours, and as in the Revolution, when the dark days came, New Jersey made her small subscription at the moment when it was most needed and gave most encouragement; so the subscription of that State to the Board of Finance enabled it to weather the storm."

OTHER STATE DAYS.

The following was the order and dates of "State Days at the Centennial:" New Jersey, August 24th; Connecticut, September 7th; Massachusetts, September 14th; New York, September 21st; Pennsylvania, September 28th; Rhode Island, October 5th; New Hampshire, October 12th; Delaware and Maryland, jointly, October 19th; Ohio, October, 26th; Vermont, October 27th.

EXCURSION PARTIES FROM NEW JERSEY.

The grand excursion of the Singer Manufacturing Company's employees, June 23d, numbering nearly four thousand, exclusive of invited guests, to the Centennial Exhibition, is generally conceded to be the most stupendous and costly affair of the kind ever known in this or any other country, and was a most remarkable and gratifying exhibition of generosity on the part of the managers of this colossal corporation. The magnitude of the undertaking astounded the foreign exhibitors who witnessed the scene on Belmont avenue, and they could scarcely believe that it was the unselfish work of a private company. The citizens of Philadelphia and the managers of the Centennial were both surprised and gratified with this novel and unparalleled exhibit. New Jersey could safely challenge other States to match it. The excursion was planned and carried into execution by the President, Mr. Hopper, and Vice President McKenzie.

The works of this mammoth company are located mainly at Elizabeth, with an important branch in Newark. The two cities were astir while the operatives were assembling around the depots for departure to Philadelphia. About eighty cars were needed to transport the parties, which were nearly equally divided between the Bound Brook and Penn-

sylvania Railroad Companies. The Mayor of Elizabeth and other city officers and Councilmen, with numerous prominent citizens from the two cities, were invited as guests, and a goodly number were in attendance and occupied the parlor car provided for them. A band of music was one of the cheering accompaniments, and nothing seemed to be omitted on the part of the officers of the Singer Company to render the day memorable and joyous.

The citizens of Elizabeth were in no way disinclined to enhance the pleasure of the excursionists, or to testify their esteem for those who represented the generous corporation. And how could they more effectively display their interest in the occasion and the company than by providing a handsome banner to deck the head of the column on its homeward march?

At half-past nine o'clock the trains from each road reached the Park entrance, and, preceded by their band, four abreast, the procession occupied half an hour in passing through the gate onward up Belmont avenue to the New Jersey State Building, where they were received by the State Commissioners. The multitude exceeded the limits of the building, so its ample surroundings were densely thronged by the host. The wide verandahs and piazzas were assigned to the invited guests, including foreigners, Commissioners and other Centennial officials.

It was expected that Governor Bedle would have been present to make a short address, but his health would not admit of it. S. C. Brown, President of the State Board of Commissioners, appeared at the rear piazza and read the following letter from the Governor:

STATE OF NEW JERSEY, EXECUTIVE MANSION, }
TRENTON, June 22, 1876, }

Samuel C. Brown, Esq., President of New Jersey Commission:

DEAR SIR:—I am very sorry not to be able to be present

to-day to meet the operatives of the Singer Sewing Machine Company at the New Jersey Building. My illness has been complicated by many engagements, and I find that, contrary to expectation, official duty requires me to be in Trenton to-day. I am the more reconciled to this from the fact that were it not so my recovery is not sufficient to justify the excitement and exertion of the occasion, although I had hoped it would be otherwise. New Jersey is deeply interested in her industries. In her mechanical skill and pursuits particularly she is making rapid advancement. Our State is particularly happy in having so many large manufactories within its borders. Capital is encouraged to concentrate there, and is protected by wholesome laws and faithful administration of them. The establishment of the Singer Company is a most important acquisition to the State; it adds largely to our wealth and increases our population with steady, industrious mechanics. These are welcome to New Jersey, and are essential to her growth and progress.

Please express my regret at not being present to-day, and thank the proprietors and employees for the honor of the call.

Yours, very truly,

J. D. BEDLE.

Mr. Brown, in a few remarks, and in the name of the State Commissioners, welcomed the four thousand New Jersey operatives and citizens to the building and to the full enjoyment of the conveniences which the State had provided within. He then announced that President Hawley, of the United States Commission, was present, and would make a short address of welcome to the Exhibition, which he did as follows :

“ I should not think of detaining you for any length of time in this sun or to keep you away from the many things

to be seen in the acres covered by these buildings. I merely state that we have heard of your visit, and extend to you a cordial and official welcome. It is the first of these great excursions which we hope to see here—not made up of those who can afford to go anywhere, to Europe or California, but composed of working people. The Exhibition is yours; it was made by you and for you. Whether under a king or an emperor, the mechanic is king within these walls. What a magnificent demonstration that is in Machinery Hall. I had a gentleman tell me he never went into it without tears in his eyes, and I have seen them myself sit for hours before that magnificent engine in the hall and study it as they would a poem. It is a poem. Wealth has nothing to do with this Exhibition; it is brains and hands which have made it. I wish that you and all like you could spend not a day, but a month here. People from other nations are here, expressing good will to this people. It does us good in various ways. Sections forget past differences, and as they shake hands exclaim, ‘This flag is ours, this Constitution and this land are ours, and under God we will make it a greater one than our forefathers thought it would ever become.’”

The presentation of the flag was next in order, and Mayor Townley, of Elizabeth, came forward, and, in the name of the citizens he had the honor to represent, presented to the Singer Company and its employees a silken banner as a souvenir of the day and a mark of appreciation from the citizens at large. The flag is about four feet square, made of Mazarine blue silk, fringed with gold bullion. On one side is the inscription in gold, “The City of Elizabeth to the Singer Manufacturing Company; she honors her industries.”

The president, Inslee Hopper, very handsomely accepted the banner on behalf of the Company he represented, and assured the donors that it should be held as a sacred token, significant of mutual esteem existing between the parties

here assembled, and a memorial of the occasion which has brought together this vast assemblage. He returned thanks to President Hawley for his hearty welcome, and to the New Jersey Board of Commissioners for their presence on this occasion, and their kindness to all the Elizabeth guests.

By this time the excursionists were ready for sightseeing, and dispersed to view the wonderful Centennial Exhibition.

Early in the afternoon Messrs. Hopper and McKenzie entertained about one hundred of the friends who belonged to the party, including General Hawley, Director General Goshorn, the New Jersey Board, Secretary Campbell, and other Centennial officials, very handsomely, but informally, and with great satisfaction, at the Lafayette Restaurant, and thus terminated the ceremonial part of this very memorable day to the Singer Manufacturing Company's operatives.

Excursion parties, representing cities, towns, schools, large manufactories, and various organizations from every section of the country, became almost daily incidents at the Exhibition. This associated system of visitation was encouraged by the Centennial authorities and transportation companies, as mutually conducive to their interests, as it surely was a means, to some extent, of lessening the cost of a day's sojourn at the Exhibition, to those who availed themselves of its advantages. Did it not render us liable to unjust criticism for endeavoring to engross the plaudits of the community in behalf of our State, we should be tempted again to exult in another triumph, for in magnitude and liberal outlay on the part of employers, the Singer Company demonstration in this line of exhibits has never been equaled upon any occasion.

The next in point of numbers, from our own State, was that of the Clark Thread Company of Newark (literally an importation from Scotland.) This company is one of the most extensive and prosperous within our bounds, and

was represented upon this occasion by Mr. Clark, the President, who with his superintendent and treasurer, had the supervision of the day's proceedings. The number brought into the grounds by this company was fourteen hundred. There was less formality, but it was no less successful and satisfactory to those who composed the party, than the Singer's affair which preceded it.

On the arrival of the trains laden with the Newarkers, headed by an escort of Centennial Guards with music and the officers of the company, the procession passed through the central gate and marched up Belmont avenue to the New Jersey Building where they enjoyed a short rest and relieved themselves of dusters and other incumbrances, while they were going the rounds of the Exhibition.

Later in the day President Clark invited the New Jersey Commissioners and several of the Centennial officials to partake, with about one hundred Newark gentlemen, of a sumptuous lunch at the American Restaurant, which proved to be a very agreeable finale of the day's proceedings.

The moral effect of these large bodies of operatives from single establishments was very noticeable. Foreigners were specially interested in them, and incredulous as to their being types of our American laboring classes. These sober-minded, well clothed and mannerly phalanxes of mechanics and day-laborers of both sexes, denoting a social condition wholly at variance with the fraternity in other countries, was an exhibition of unusual interest even to our own countrymen. Thrift and a good degree of mental cultivation are standard acquirements in manufacturing circles, where American operatives predominate or their frugal characteristics have been infused. It need occasion no wonder that inquisitive visitors from abroad viewed these animating spectacles with mingled admiration and surprise. They seized this opportune occasion to appear in our midst in the character of experts in what essentially relates to manu-

facturing interests, and not having been accustomed to witness such displays of generous and beneficent consideration for the improvement and happiness of the laboring classes, could not fail to discover their significance.

While these terrifying contrasts are indicative of higher remuneration for labor, it does not necessarily imply a corresponding inability of our manufacturers to maintain present achievements in their prolonged heroic contest with older nations, nor preclude the possibility—nay probability—of ultimate victory to ourselves, even in our more recent exploits in the line of labor-absorbing textile fabrics. These latter productions would seem to be almost the last to demand the continued employment of our skill and enterprise, to win in the vigorous rivalry that has been waged for many years on both sides of the Atlantic.

PRESENT AND FUTURE MANUFACTURING INDUSTRIES OF NEW JERSEY.

Since the United States is evidently to become the great manufacturing and exporting nation of the world, and before the lapse of many years, too, it behooves us to see to it that our State, so liberally endowed with natural advantages, as we think she is, shall have her share of these expanding industries, located within her bounds.

Our Board has had frequent discussions over the subject of the introduction into this State of the manufacture of the finer textile fabrics, millions of which are imported into this country every year from the continent of Europe. It is well known that we are already producing in this State fabrics made up of silk, and silk and cotton combined, ribbons, cords, fringes, &c., &c., and every variety of silken products hitherto brought from France and Germany. Our success in these lines of fancy loom products only make it

the more imperative for us to give attention to these essentials, and make them specialties in our State.

But the successful introduction of these new and higher grades of industries is not to be effected hastily, for there is much preliminary work to be done. To produce the kind of goods we are now considering demands a class of skilled labor which cannot be obtained in this country except by importation. We, of course, have the material out of which to make it, but have not the schools where our men, women and children can secure technical instruction in the advanced grades of industrial development. And this brings us to the point we, as a Board, have considered as worthy of State action, viz.: the establishment at the Stevens Institute or elsewhere of a department for technical instruction that will supply this great need of skilled labor, so that we may not be necessitated to go abroad for those who have graduated from similar institutions in Germany. If we are ultimately to cease to import, and supply not only the home demand for every class of goods we now import, but to manufacture for other continents and islands far and near, we can only do it successfully by studying and adopting what is obviously worthy of imitation in other countries.

At no time since your Commissioners entered upon the work assigned to them, have they been otherwise than hopeful of vast benefits to flow to our country at large, and more surely to the manufacturing States, from the Exhibition. And it is daily more apparent to them that we can look forward to its becoming a potent agency in reviving our languishing industries. The evidences tending to this probable result are cumulative and trustworthy, and reach us from transatlantic sources where they would naturally be longest withheld.

The Centennial year will be an epoch to mark renewed activity and new impulses to skill and enterprise throughout our country, which give promise of permanent gain to

every existing mechanical pursuit, and bring to our shores new and untried industries to be developed under American auspices. The American Department of the Exhibition has undoubtedly convinced Europeans quite generally that the United States will assuredly very soon supplant some of its rivals in their own dominions, and become an exporting nation upon a scale scarcely conceivable now.

Those of us who were brought in contact at the Exhibition with representative men from abroad, who came to our shores upon a mission of observation and inquiry into every thing and subject on this side the water that menaced foreign interests, were often frankly assured by them that their manufacturing interests were seriously imperiled by ours. These apprehensions do not relate only to the finer fabrics now being produced here quite extensively, but to the coarser and staple articles brought from Birmingham, Sheffield and Manchester, and from the Continent as well.

We are not only lessening our imports, but are beginning to place cotton fabrics of American make in Manchester, and a recent English paper says that "the United States products are rapidly supplanting those of England in our colonial dependencies of Australia, New Zealand, West Indies and Canada."

The report made at Vienna on "Textile Industry" says, "among the extra-European countries, North America takes the first place in the cotton industry. It has already 9,000,000 spindles, or as many as Germany and France taken together. Europe must prepare itself for losing the custom of North America for all articles which can be made by machinery. This will be an almost irreparable loss for Europe, and the reaction upon all classes can scarcely be estimated. We cannot avoid the impression that the zenith of the industrial superiority of Europe was included in the period from 1850 to 1880, and that the time is not far distant when America will not only surpass us in mechanics,

but in all industrial branches. We find there a freedom of development, a richness of soil, and an abundance of mental strength and energy opposed to which Europe appears like a pedantic old matron." Referring to "printed fabrics," it says, "North America now produces all its common printed fabrics, and only receives the finer articles from Europe, as its spinning and weaving establishments are not yet arranged for finer goods. The coming years will, however, materially change this, since the development of the cotton industry is making rapid progress in this direction also."

New Jersey has maintained her sixth position in the list of manufacturing States not only, but her percentage of products, from 1850 to 1860, was higher than either of the other six except two Western States, viz.: Illinois and Ohio; and from 1860 to 1870 Pennsylvania was the only Eastern State whose increase was greater, and two Western, viz.: Missouri and Illinois. It will thus be seen that the ratio of increase in manufacturing in our State has been steady and in excess of all the New England States and New York, and for twenty years has not been exceeded except by one, viz.: Pennsylvania. These are significant facts and worthy of more prominent consideration.

It was our purpose to obtain and exhibit in this report the industrial products of New Jersey in a detailed tabular form for the year 1876, but our earnest and quite laborious endeavors to do so have not been as successful as we anticipated.

We fully understood the difficulties always encountered in similar undertakings, but it was deemed best by the Board to avail themselves of the Centennial year, in the absence of legislative authority, to canvass the State manufacturing interests with the view of showing, in this appropriate year, the variety and extent of our achievements in productive pursuits.

Our first hope was to obtain the requisite information

from the last State census, but that was found to be so totally unreliable that no satisfactory use could be made of it. It was then determined to send a circular to the manufacturers throughout the State, soliciting the "capital," "products" and "hands employed." The responses were by no means commensurate with what we know to be the manufacturing capacity of the State.

The depression of every business interest of the country dissuaded us from hopeful expectations in regard to the proposed statistics, and we were also distrustful of a reliance upon a voluntary disclosure of the business details sought. It is possible if we had omitted "capital" in the blank table, a more satisfactory result would have ensued; still, census gatherers, clothed with the authority of law, have always met with a morose disinclination on the part of manufacturers to furnish the information demanded by legislative authority even.

We do not hesitate, however, to announce it as our conviction, from what we have collected relative to our State industries, that they strongly indicate an advance over that shown by the United States census of 1870, which was as follows:

Establishments, 6,636; hands, 75,552; capital, \$79,606,719; wages, \$32,648,409; products, \$169,237,732.

We place beside the above, the following result of our endeavor to get the same or similar facts for 1876, as follows: hands, 66,036; products, \$130,401,361.

Our population increased from 1850 to 1860, 37½ per cent.; from 1860 to 1870, 34¾ per cent.

The falling off in the second decade is no doubt attributable to the losses by the war and changes incident to it.

The product of our industries from 1850 to 1860 increased 92 per cent.; from 1860 to 1870, 122 per cent.

The extraordinary demands made upon our manufacturing energies by the war, sufficiently explain the large per-

centage of increase between 1860 and 1870 over the preceding decade.

The United States census of 1870 was not regarded as even ordinarily accurate, and good sources of information render it probable that at least twenty-five per cent. could safely be added to the general result as reported.

In large centres of population and of industrial pursuits, a revision of the census revealed omissions in many cases of over fifty per cent. But competent authorities state the average of these omissions at about eighteen per cent., which would give New Jersey a total product in 1870 of \$201,392,911.

From 1870 to 1872-73 was a period of great activity in very many branches of industry, and it is supposed there was a considerable increase over the preceding year. The same authorities referred to above believe that increase to have been at the least 15 per cent for the two years, which would make our State productions in 1872-73 \$231,601,841, assuming our increase to be no less than the other States.

The estimated advance in the first two years of the present decade, extended through the Centennial year, would furnish a product for 1876 of \$310,145,082; and in 1880 \$382,046,529, about one-half as large as the product of the State of New York in 1870.

The leading industrial products of New Jersey are leather, iron and metals other than iron, cotton, wool, glass, silk, jewelry, pottery, rubber, fire and common brick, carriages.

RECORD OF PROCEEDINGS OF THE STATE COMMISSION.

At the call of Governor Bedle, the members of the New Jersey State Centennial Commission met in the Executive

chamber, at Trenton, Monday noon, May 12th, 1875, to organize the Board.

There were present Messrs. Dale, Brown, Bettle, Hunt, Janeway and Condict; also John G. Stevens, of the United States Commission, his associate, Mr. Cleveland, being absent.

Mr. Dale was appointed Chairman, and Mr. Brown Secretary.

The members then proceeded to the election of permanent officers of the Board, which resulted in the choice of Samuel C. Brown for President, and P. T. Quinn for Secretary.

It was ordered that the central office of the Commission be in the State House, but that special meetings be held in different parts of the State as necessity required.

A meeting of the Board was held in Philadelphia, May 14th, at which Messrs. Brown, Bettle, Janeway, Dale, Hunt, Condict and Stevens were present, with the Secretary. The principal object of this meeting was to confer with the United States Commission and the officers connected therewith, with a view to getting suggestions and co-operation in our labors in behalf of our State and individual interests in the proposed exhibition. Valuable information relating to the preliminary work we had in hand was derived from Director General Goshorn and Prof. Campbell.

The Board ordered the preparation and immediate distribution of 2,500 circulars, setting forth the objects and advantages of the Exhibition, and giving such information as those who proposed to become exhibitors would need in advance of making application for space. Copies of the following circular were mailed to the newspapers generally throughout the State, and to the manufacturers with an ac-

companying blank application for space, which elicited responsive letters of inquiry from every section and interest in the State.

RULES AND REGULATIONS FOR EXHIBITORS.

The Main Exhibition Building.

The space granted to an exhibitor within the building is available floor space, exclusive of the intermediate passages between the exhibits. It may be utilized in various ways, as follows :

By placing the products exhibited directly upon the floor ;

By constructing a low platform upon which they may be placed ;

By erecting counters upon which they may be arranged ;

By erecting ornamental columns, pyramids, cones and partitions to obtain wall space ;

By erecting show-cases in which the exhibits may be tastefully displayed.

There will be no charge for space, but all platforms, counters, ornamental partitions, show-cases and appurtenances must be erected at the expense of the exhibitor. No particular form or design is prescribed for the cases, counters, &c., but they must not exceed the following heights without special permission from the Chief of Bureau :

SHOW-CASES AND PARTITIONS—Fifteen feet above the floor ;

COUNTERS—Two feet ten inches above the floor, on the side next the passage-way ;

PLATFORMS—One foot above the floor.

In order to secure the advantageous and satisfactory location of products exhibited, applicants for space desiring to erect show-cases, counters or partitions must furnish to this bureau a scale drawing or tracing, showing clearly the elevation and ground plan of the same, and if the case is in-

tended for inspection from all sides; if not, which sides are open for inspection, and which form the back or sides. In many instances cases will be placed back to back.

Exhibitors have the privilege of placing railings, of approved design, around the space allotted to them. All such railings must be of the uniform height of two feet six inches above the floor level, and may be attached to the case by projecting brackets, or be supported by posts from the floor. In every instance the floor space granted includes the area embraced by the railing. The line of the railing will be placed upon the line of the passage-way, and no railing will be allowed to project beyond the case or counter into the passage-way.

Exhibitors desiring to display products pendant from the roof trusses must in every case obtain special permission to that effect from the Chief of Bureau.

No exhibitor will be permitted to display products in such a manner as to obstruct the light or vistas through the avenues and aisles, or occasion inconvenience, injury, or disadvantageously affect the display of other exhibitors.

Signs will not be allowed to project beyond the floor area of the space allotted, nor will signs made of canvas or paper be permitted. The naves, avenues, aisles, and public passage-ways remain under the control of the United States Centennial Commission; and no trophies, decorations, portals, fountains, or other special exhibits will be permitted in them, except by special permission of the Director General.

Each column within the building will be lettered and numbered; the letters designating the lines of columns, lengthwise, from east to west, and the numbers the lines, crosswise, from north to south. Each exhibitor will have his location defined with reference to the nearest column, and the official directory of the building will give the positions according to this system.

Exhibitors having space granted in close proximity to

the columns or outer wall of the building, will be furnished from this bureau with drawings showing the forms of the columns, the water spouts, and the available wall space. Cards stating the exhibitor's name, class of objects, catalogue number, place of manufacture, and price, will be affixed to goods under such regulations as the commission may prescribe.

All products arriving at the doors of the building by rail, wagon or otherwise, will be received by the Bureau of Transportation, and delivered on the space granted. Each exhibitor will then be expected to commence unpacking and arranging his goods without delay. Provision has been made for the removal and safe storage of empty boxes and cases immediately after unpacking.

All exhibits must be arranged, completely and finally in position, not later than May 1, 1876. The Chief of the Bureau of Installation has charge of the allotment of space to exhibitors in the United States section. The right to alter or amend these rules is reserved.

A. T. GOSHORN,
Director General.

HENRY PETIT,
Chief of Bureau of Installation.

There will be a field trial of Agricultural Machinery and Implements; those wishing to compete, will have to use the machines on exhibition.

Exhibitors of Stock will be required to furnish their own attendants and food. The latter can be had on the grounds at the lowest market rates.

Poultry will be exhibited in the coops in which they are transported to the grounds. To preserve uniformity, these boxes will be made according to specifications furnished by

the Bureau of Agriculture. Only pure bred fowls will be admitted.

SAMUEL C. BROWN,
President.

P. T. QUINN,
Secretary.

A meeting of the Board was held at the State House, Trenton, June 28th, 1875. Present—Messrs. Brown, Condict, Bird and Stevens. Prof. George H. Cook, State Geologist, attended this meeting by invitation of the Board, as the subject of the geological exhibit was specially to be considered. After considerable discussion of the general subject of the display of our State minerals, clays, soils, fertilizers, woods and timber, Mr. Brown was requested to cooperate with Prof. Cook in obtaining designs, etc., of cases for the mineralogical and geological exhibit.

The subject of a State building upon the Centennial grounds, arranged for the convenience and comfort of our own State visitors to the Exhibition, and with offices for the use of the Commissioners, was introduced and fully discussed. There was but one opinion expressed by the Commissioners present as to the necessity of ample provision being made at the expense of the State for the purpose indicated. The President was requested to consult with an architect with the view to the preparation of a plan for the proposed building, to submit at a subsequent meeting.

The September and October agricultural exhibits were referred to, and it was deemed best to prepare a circular upon that subject for distribution at our State and county fairs. The Secretary was requested to give this circular immediate attention.

CIRCULAR OF INFORMATION TO EXHIBITORS.

The following circular was distributed at many of the county fairs, and in other ways quite generally circulated over the State :

TRENTON, N. J., Sept. 1st, 1875.

First. The International Centennial Exhibition, to be held next year in Philadelphia, will be opened on May, 10th, 1876, and continue for six months, closing November 10th of the same year.

Second. This Exhibition will bring thousands of visitors daily, not only from all parts of our own country, but from every part of the civilized world, offering a rare opportunity of showing goods.

Third. It is important, therefore, that New Jersey should be represented in every department of productive industries, as well as her choice natural products, and by this means open new markets for her multiplicity of manufactured articles.

Fourth. In order to take full advantage of this unequalled chance of displaying goods, it is of the utmost importance that application for space be made at the earliest possible moment.

Fifth. A pamphlet giving full directions about the classification of goods for exhibition, with a blank application for space, also a card giving explicit directions to exhibitors, will be mailed to all applicants from this office.

There will be a field trial of agricultural implements and farm machinery.

Sixth. There is a general impression outside of our borders that New Jersey is not a grain producing State. To correct this fallacy, and do justice to our fertile soil, patriotic farmers, in every township and county, are earnestly solicited to select from their grain crops this fall, say half a bushel of their choicest specimens of wheat, corn, barley,

buckwheat oats and rye, as well as samples of butter and cheese, for a State exhibition at Philadelphia next year.

Seventh. The officers of the State and county agricultural societies, and farmers and gardeners throughout the State, will lend material aid to the State Commissioners by urging and helping grain farmers to carry out this important project, so that our State display of cereals will compare favorably with other States.

Eighth. The exhibition of horses, mules and asses (as one class), from September 1st to 15th. Horned cattle will open September 20th, 1876, and continue fifteen days.

It is assumed that seven hundred head will cover all desirable entries; and upon this basis will be calculated the number of stalls which will be appropriated to each breed.

The scale divides the aggregate number into ten parts, and of these, four-tenths are assigned to Shorthorns, two-tenths to Channel Islands, one-tenth to Devons, one-tenth to Holsteins, one-tenth to Ayrshires, and one-tenth to animals of other pure breeds.

The exhibition in each breed will comprehend animals of various ages, as well as of both sexes. Draft and fat cattle will be admitted irrespective of breed. Sheep, swine and goats (as one class), from October 10th to 25th.

Poultry will be exhibited as a permanent and also a temporary show, the first commencing on the opening of the Exhibition, the latter from October 25th to November 10th.

Ninth. There will be a succession of exhibitions of Fruits, beginning on the opening day with Southern strawberries. The most important display will be during the months of September and October, when there will be a grand exhibition of apples, pears, peaches and grapes.

Tenth. The reception of goods for exhibition at the buildings will begin on January 5th, 1876, and close three months later, April 5th. All space not occupied by April 9th will be forfeited.

Eleventh. Address the Secretary at Centennial Commission Office, Trenton; or at Box 19, Newark Post Office. Any communications may also be forwarded through the District Commissioners.

SAMUEL C. BROWN,
President.

P. T. QUINN,
Secretary.

A meeting of the Board was held at the State House, Trenton, August 2d, 1875. Present—Messrs. Brown, Dale, Janeway, Condict, Bettle and Hunt. Prof. Cook was also present.

Mr. Brown submitted to the Board a floor or ground plan of a building for State purposes at the Exhibition, drawn by Carl Pfeiffer, architect, the dimensions of which were 50x80 feet, designed to be built wholly of New Jersey materials, embracing an exhibit of the best brick, stone and woods. After a careful examination of the plans, they were adopted; and Commissioner Hunt offered the following resolution, which was unanimously adopted:

Resolved, That the President and two members of the Commission, the latter to be appointed by the President, be constituted a Building Committee, and instructed to complete the ground plans and elevation of the 'New Jersey Headquarters' to be erected on the Centennial grounds at Philadelphia, and submit the same to the National Executive Committee for approval and location."

The President selected Messrs. Dale and Bettle to act with him on the Building Committee, which was approved by the Board.

A letter was read by the President from Director General Goshorn, urging prompt and decided action on the part of

the Commission, and requesting that early application be made for space for individual and State exhibits.

Prof. Cook informed the Board that in a few days he would be prepared to say what amount of space would be required for the proposed State geological survey exhibit.

A meeting was held at the office of Governor Bedle, in Jersey City, on Thursday, September 2d, 1875. Present—Messrs. Brown, Bettle, Hunt, Janeway, Bird, Dale and Condict. After the minutes were read, the Secretary was requested to report the number of applications for space received to the present time, which he stated to be 220, and the total square feet of space 47,000.

The labor of canvassing the manufacturing districts, and the correspondence incident to the work, was found to be so great that the Board thought it needful, in order that full justice be done to the manufacturing centres, to employ canvassers in the large cities to interest the people and obtain applications from exhibitors, and authority was given for such assistance.

The President reported that the estimates for a stone and brick structure, according to the partially completed plans before the Board at its last meeting, would probably reach, if not exceed \$20,000. No member of the Board felt willing to approve of so large an expenditure for a State Building, in which Governor Bedle, who was present, fully concurred. It was consequently determined by resolution to abandon the stone and brick design, and instruct the Building Committee to procure plans for a frame building and invite proposals for its erection, with as little delay as possible.

The Board also recommended that copies of all circulars issued by the Commissioners, together with a brief history of their organization, embracing a detailed account of their

transactions from the beginning to the close of their duties, and also a list of the New Jersey exhibitors, accompanied with whatever relates to their exhibits of special interest, be embodied in the final report of the Commissioners to the Governor.

It was also ordered that the President and Secretary be a committee to visit the State and County Agricultural Fairs as they occur, for the purpose of interesting the farmers and horticulturists in the Exhibition, with the view to having every department of agriculture fully represented.

A meeting of the Board was held at Waverley State Fair, Tuesday, September 23d, 1875, in the tent of President Clark. Present—Messrs. Brown, Hunt, Dale, Janeway and Condict.

The principal subject for consideration at this meeting was a proposition received from the Hall Safe Manufacturing Company, relating to an arrangement for the protection of jewelry and other valuable property belonging to our State Exhibitors, against burglary and fire, but the plan was found to be impracticable and was abandoned.

The Board met at the office of the National Commissioners, at Philadelphia, November the 24th. Present—Messrs. Brown, Hunt, Dale, Bettle and Cleveland. After the minutes of the last meeting were read and approved, letters from Messrs. Bird and Condict were read excusing their attendance.

The Secretary reported that up to this date the total applications for exhibition space were 403, covering in round

figures 75,000 square feet, and that nearly one-half of the applications thus far were from Essex county.

The Building Committee reported that they had, after advertising in various sections of the State and receiving quite a large number of proposals, awarded the contract for the wood work alone of the State Building to John Evans, of Trenton, for six thousand and forty dollars, the time for completion being March 1st, 1876.

The President presented a report he had prepared for the Governor, giving an outline of what the Commission had done since its organization. It was ordered that, with some alterations, such as the President thought expedient, the report be forwarded to Governor Bedle.

Commissioner Cleveland offered the following:

Resolved, That no stands for the sale of any articles of refreshments or fancy goods be permitted, and that the use of intoxicating liquors shall be prohibited in all parts of the New Jersey Headquarters."

Commissioner Bettle offered the following:

Resolved, That the soliciting of subscriptions be prohibited within the grounds and building under the control of this Board."

The subject of collecting statistical information pertaining to the State was discussed and warmly approved.

Commissioner Dale offered the following:

Resolved, That the President appoint a committee of three from this Board to collect and prepare for publication in a compact form, statistical information on the industries of New Jersey, for general distribution next year."

After the adoption of the resolution, the President appointed Messrs. Hunt, Cleveland and Dale, the committee, with P. T. Quinn, secretary.

A meeting of the Board was held at the office of the Commissioners in the post office building at Newark, January 7th, 1876. Present—Messrs. Brown, Bettle, Dale, Hunt and Condict, and by invitation, the Hon. Amos Clark, and the Hon. Phineas Jones, representing the State Agricultural Society.

The minutes of the previous meeting, as usual, were read by the Secretary, after which Mr. Brown stated, that one of the objects of this meeting was to consider the importance of, and best mode of securing such a representation of our agricultural products as may and ought to be made worthy of the State of New Jersey.

After considerable general discussion of the agricultural question, it was

“*Resolved*, That the President and Secretary be appointed a committee to prepare some feasible plan by which all of the ‘County Societies’ and local ‘Farmers’ Clubs’ throughout our State be enlisted in this enterprise, and take immediate steps to carry out the spirit and letter of this resolution.”

The President reported good progress in the erection of the State Building, and was instructed by resolution to have it insured for eight thousand dollars, for one year.

A meeting was held at the Executive Chamber, in the State House, on Wednesday, January 26th, 1876. Present—Messrs. Brown, Hunt, Dale, Condict and Bettle.

The minutes of the previous meeting were read by the Secretary and approved.

The President reported upon the subject of the Agricultural Exhibit, to the effect, that he and the Secretary had consulted with the officers, both of the State Agricultural Society and the State Board of Agriculture and others in-

terested in this State display, and it was decided to call a public meeting in the Assembly Chamber, on the evening of the 26th, to which the Secretary was requested to invite the members of the State and County Agricultural Societies and the members of the Legislature. The State Board of Agriculture being in session at the State House, holding their annual meeting, were also invited.

An adjourned meeting of the Board was held in the Assembly Chamber, at 8 o'clock, P. M., to participate in the deliberation of the general meeting. The President called the public meeting to order, and nominated Governor Bedle for Chairman, and William Hunt, of Newark, for Secretary.

On taking the chair, the Governor made a short and effective speech, in which he warmly endorsed the action of the State Commission, and appealed to the farmers throughout the State to aid in this worthy undertaking.

Prof. Atherton, of New Brunswick, Judge Buchanan, Phineas Jones, Thomas N. Dale and S. C. Brown, each, followed the Governor with brief addresses upon the general subject under consideration.

Prof. Atherton offered the following :

Resolved, That the representatives of the counties here present be requested to name three or five persons, from their several counties, who will undertake, in co-operation with the State Centennial Commission, to secure a complete exhibition of samples of all cereals produced in their counties, and to raise the sum of one hundred dollars for the purpose of paying the necessary expense of making such collection."

Second—That in case of counties not here represented, the Centennial Commissioners be requested by correspondence

with agricultural societies, or otherwise, to secure the appointment of the proper persons to carry out the above plan.”*

CIRCULAR RESPECTING AGRICULTURAL EXHIBITIONS.

In the absence of instructions from Philadelphia in reference to the agricultural exhibits, the following circular was issued by the Board :

The National Centennial Commissioners have not up to this date, named any specified quantities of Agricultural, Horticultural or Dairy products for exhibitional purposes. They feel that each State or individual exhibitor should decide this matter in their own respective cases.

Our State Centennial Commissioners have had the subject under consideration, and they have come to the conclusion, that with quantities named, our State will make a larger and more uniform exhibition of the products of the soil. They therefore offer the following outline instructions for the guidance of those who purpose taking part in the International Exhibition to be held in Philadelphia the present season.

Objects placed on exhibition within the Agricultural Building, may be entered either for display, or in competition with others of like character.

Competitive objects will be examined by the International Jury, and if highly meritorious, will be awarded both a bronze medal and a diploma, as well as favorable mention in the reports.

Objects offered for competition, will be most acceptable if classified as follows :

Cereals.—Cereals or other agricultural or farm seeds, en-

* From three to five persons were appointed in pursuance of the resolution from nearly every county in the State, but subsequently they were so changed, and so few of the counties took any part in the preparation of the State Agricultural Exhibit, that we omit the list altogether.

tered for specific competition, will be exhibited in quantities of one-half peck. The varieties of each genus limited to those that are recognized as distinct, thus: winter wheat from spring wheat; red wheat from white wheat; early corn from late corn; yellow corn from white corn; flint corn, from ground, seed or dried corn. The multiplication of varieties being so great, this limitation is necessary. Best general or collective display of cereals in quantities of one-half peck. Best display of cereals in the straw.

Field Seeds.—Best display of field seeds in quantities of one-half peck.

Grass Seeds.—Best display of grass seeds in quantities of one-half peck.

Grasses.—Best display of pasturage grasses grown in portable vessels, and properly labeled with botanical and common names.

Garden Seeds.—Best display of garden seeds in quantities of one quart.

Flower seeds.—Best display of flower seeds in quantities of one gill.

Wines, &c.—Wines, brandies, whiskeys, malt liquors, not less than one gallon.

Syrups.—Syrups and similar animal and vegetable extracts will be exhibited in quantities of not less than one gallon.

Vegetables.—Esculent vegetables, roots and tubers being perishable articles will be received on Wednesday of each week throughout the entire season of the Exhibition. On Thursday of each week examination will be made, and properly recorded for further reference.

Nine specimens of each variety will be the unit for competition, though in special displays the quantities will be enlarged.

Farinaceous Products.—Farinaceous products will be exhibited as follows:

Flour, decorticated grains, &c., in quantities of one half barrel. Farina, starch, tapioca, sago, &c., in quantities of one-quarter barrel.

Canned Fruits and Dried Foods.—Preserved meats, fruits and vegetables, concentrated meats and condiments in samples of half a dozen quart cans or other similar packages.

Honey and Beeswax.—Honey and beeswax may be exhibited in lots of ten pounds, and in all usual conditions. Honey in the comb may be displayed in ordinary forms, and in such ornamental devices as can be produced.

Fruits.—Large fruits may be exhibited in dishes of not less than five specimens of each except in the case of varieties exhibited for first time under which circumstances three specimens will be sufficient. They being perishable will be received on Wednesday of each week, and will be examined on each Thursday, and careful reports be preserved for reference as to variety, quality and conditions.

Fruits that are especially perishable, should be sent in excess of the proportion designated as the unit for competition, that the dishes may be refurnished as circumstances may dictate.

Awards will be made for the best dish of each distinct class of fruits; as for instance, apples, peaches, berries, &c.

Awards will be made for the best display of large fruit of each distinct variety, and for the best quart of each variety of small fruit.

Awards will be made for the best display of strawberry plants in bearing condition, six pots of each variety, one plant in a pot.

Agricultural Machinery.—Steam power will be furnished free of charge to such exhibitors as may require power to display their machinery.

An award will be made to the best machine for each respective purpose in tillage, culture, harvesting, preparation for market and in farm economy.

Live Stock.—The exhibition of live stock commences September 1st, and continues in serial show till November 10th.

Stalls will be provided free of charge, and animals entered without fee, but exhibitors must assume all costs of attendance. Classification for prizes can be had on application.

Butter.—Butter will be judged upon the relative merits, as to make, flavor, texture and solidity.

Parties exhibiting for competition must be prepared to furnish full statements as to the making of the butter, upon printed lists which will be supplied.

Butter offered for competition will be in most acceptable form, if made under the following classification applicable, respectively, to the manufacture of creameries and dairies.

Best sample of 200 or more pounds made at any time.

Best package of 50 pounds made in each month respectively.

Best package of 50 pounds made at any time.

Best package of 50 pounds of oldest make.

Best sample of 5 pounds in 1 pound prints.

Best sample of 5 pounds or more made respectively from the produce of the various breeds of cattle.

Cheese—Cheese will be judged upon the relative merits as to quality, make, texture, flavor and color.

Parties exhibiting for competition, must be prepared to furnish upon printed lists, which will be supplied, full statements as to the method of manufacture of rennet.

Cheese must not be cut, bored or tried in any way before being exhibited, or it will be disqualified for competition.

Awards for cheese will be made, respectively, upon the various established appellation both of foreign and native production :

Of factory manufacture and dairy production ; of that of one year old, and that under one year.

Cheese offered for competition, will be in most acceptable form, if made under the following classification.

Heaviest cheese of good quality of each appellation.

Best three cheeses of each brand respectively of 70, 50, 30, 18, 10, 8 and 5 pounds.

Best cheese in each class artificially colored.

Best cheese in each appellation of natural color.

Best cheese of oldest make of each appellation.

Best lot of three prepared rennets.

Milk—Condensed milk and milk otherwise prepared, shall be exhibited in lots of one dozen cans of usual commercial size.

Manures—Fertilizers of volatile character must be exhibited in glass vessels hermetically sealed. One peck will be the least quantity of any one brand entered for display. Each vessel must bear a sworn analysis of its contents.

Besides the classification above mentioned, the Jersey Cattle Club offer \$1,000 for the best herd of that breed.

The Produce Exchange of Philadelphia, \$150 for the best cheese.

B. K. Bliss & Son, \$200 for the best display of potatoes.

D. Landreth & Son, \$100 for best display of vegetables.

P. Henderson & Son, \$100 for best display of tomatoes.

The Pennsylvania Agricultural Society, \$1,000 in special prizes.

Memphis Cotton Exchange \$1,000 for best bale of cotton; \$150 for the best display of Fowls, and two silver cups for the best setter dogs.

Special display.—Though agricultural productions of perishable character will be displayed throughout the entire season of the Exhibition; still there will be certain periods set apart for displays.

The following dates have been selected for the exhibitions named:

Pomological products and vegetables, May 10 to 20.

Spring honey and wax, June 7 to 15.

Strawberries, June 7 to 15.

Mowing machines, tedders and rakes, on trial in the field,
June 12 to 21.

Early summer vegetables, June 20 to 24.

Early grass butter and cheese, June 20 to 24.

Raspberries and blackberries, July 3 to 8.

Reaping machines on trial, July 5 to 12.

Southern pomological products, July 18 to 22.

Melons, August 22 to 26.

Peaches, September 4 to 9.

Northern pomological products, September 11 to 16.

Cereals, September 25 to 30.

Autumn vegetables, September 19 to 23.

Potatoes and feeding roots, October 2 to 7.

Autumn butter and cheese, October 17 to 21.

Nuts, October 25 to November 10.

Autumn honey and wax, November 1 to 10.

SAMUEL C. BROWN,

President.

P. T. QUINN,

Secretary.

A meeting of the Board was called to be held at the National Centennial Commissioners rooms in Philadelphia, on Wednesday, March 8th, 1876. There were present Messrs. Brown, Bettle, Dale, Hunt, Condict and Janeway. Minutes were read and approved.

The Secretary reported favorably as to the interest that the county agricultural committees manifested in getting up a State display of Cereals for the Exhibition.

It was thought necessary to have a central committee appointed to take charge of the cereals and the money collected from the counties, and Messrs Brown and Bettle were

instructed to select three persons to constitute such a committee.

The Building Committee reported good progress in the construction of the Headquarters. They were instructed to engage a janitor and wife for six months, to take general charge of the building at the proper time.

By resolution, the Building Committee was instructed to grade, sod and enclose the grounds around the building with a neat fence, and have constructed such sheds as they may think essential.

The Secretary mentioned that applications for space in the various exhibition buildings continued to be received.

The President made some statements in reference to the condition of the finances of the Board, whereupon the Board adjourned.

A meeting was held at the National Commissioners' office in the Centennial grounds, Philadelphia, April 12th, 1876. Present—Messrs. Brown, Bettle, Dale, Hunt and Condict. The minutes were read by the Secretary and approved.

Mr. Brown announced that he and Mr. Bettle had selected Wm. Bettle, of Camden, Wm. S. Taylor, of Burlington, and Samuel Hopkins, of Gloucester, as the committee to have the supervision of the agricultural exhibit, which was approved by the Board.

The Building Committee informed the Board that the State Building was soon to be finished, and also the grading, fencing, etc.

They consulted their associates as to the necessity of putting up lightning rods, and all agreed that it was not advisable.

They also reported that they had engaged a janitor and his wife for \$80 per month, they to board themselves.

Various minor subjects were talked about, after which the Board adjourned.

The Board met at the State Building on the opening day of the Exhibition, May 10th, 1876, at four o'clock. Present—Messrs. Brown, Bettle, Janeway, Bird, Dale and Condit, Mr. Hunt having returned home after the opening ceremonies were over.

The minute book not being at hand, the reading of minutes was dispensed with.

The President stated that what remained unfinished about the building and grounds would require about two weeks more time.

The Secretary informed the Board that Messrs. A. Hance & Son (nurserymen), of Red Bank, N. J., had volunteered to decorate the grounds and building with ornamental trees, shrubs, vines and flowering plants without expense to the Commission. The proposition was cheerfully accepted, and the Secretary was instructed to communicate to the Messrs. Hance the Board's acceptance of their very liberal offer.

A meeting of the Board was held at the Headquarters, June 2d, 1876. Present—Messrs. Brown, Bettle, Dale, Janeway and Hunt. In the absence of the Secretary, Mr. Bettle was appointed to act in Mr. Quinn's stead.

It having been proposed for Governor Bedle to hold a reception at the Headquarters, the subject was considered, and it was decided, if it suited the Governor's convenience,

to hold it on Saturday, June 10th, between the hours of 12 and 4 o'clock.

It was ordered that invitations to the reception should be sent to the United States Commissioners, Board of Finance, Heads of Bureaus, State Boards of Commissioners, Members of Congress from New Jersey, Judges and other State officers, including Senators and Members of Assembly.

Messrs. Brown and Bettle were appointed a committee to carry out and make all needful arrangements for the reception.

A meeting of the Board was held at the Headquarters, August 4th, 1876. Present—Messrs. Brown, Dale, Condict, Janeway, Bird and Hunt.

The President reported that the day fixed for the Governor's reception was necessarily changed, and, after consultation with Governor Bedle, Thursday, August 24th, had been decided upon for holding a public reception at the State Building, and it was suggested that this Board make the twenty-fourth a *New Jersey State Day at the Centennial*.

Messrs. Brown, Bettle and Secretary Quinn, were appointed a committee to provide refreshments and make all other necessary arrangements for the occasion. A letter was received from Mr. John G. Stevens, explaining his inability to attend this meeting, and Mr. Cleveland telegraphed that he was unable to attend, but was warmly in favor of having the reception day, a holiday throughout the State.

A letter was also received by the President from Governor Bedle, saying he would positively be at the grounds on the twenty-fourth, and hold his reception between one and three o'clock, in the afternoon.

In addition to the guests to be invited and named at the June meeting of the Board, it was ordered that an invitation be sent to all the editors and proprietors of newspapers in

the State, and to the Mayors and Councilmen of each city and town, that the Commissioners may thus secure the interest and co-operation of the citizens generally in the endeavor to render the "Jersey Day" at the Exhibition, worthy of being imitated by the other States of the Union.

The following resolution was adopted unanimously :

"WHEREAS, The cost of the New Jersey State Building and appurtenances has been larger than the expenditures contemplated in our action of September 2d, 1875, at the meeting held in Jersey City ;

"Be it Resolved, That the increased expenditures were demanded, and that the action of the Building Committee, as now presented, is unanimously approved."

A meeting of the Board was held in the State Building, October 6th, 1876, at 12 M. Present—Messrs. Brown, Jane-way, Hunt, Condict and Bird. Prof. Cook was also present by invitation. The Secretary read the minutes of the previous meeting which were approved.

Mr. Brown brought up the subject of the final report to the Legislature, for consideration. After a general discussion of the subject, the following resolutions were approved :

"Resolved, That the final report of the Commissioners to the Legislature, shall include the names of all the Exhibitors from New Jersey with their residences, and that the Secretary prepare such a list and present it at the next meeting of the Board for further action ; and that copies of the old map of New Jersey, now in possession of the State Geologist, which was printed in 1777, be bound in the report ; and that a new map of the State be prepared for 1876, to be embraced in the report also, as a companion to the one previously referred to."

Resolved. That the President of this Commission be requested to communicate with Mr. Browning at once, and ask him for a copy of the address he delivered in Judges' Hall, on New Jersey day, to be embraced in the report of this Commission, which, when completed and printed, will be generally distributed among foreign and State Commissioners who were in attendance at the Exhibition.

It was ordered that the President be authorized to procure an imperial photograph of the State Building for the members of the Board, the Secretary, and others who may be entitled to them.

The Board met at the State Building on the ninth day of November, 1876. Present—Messrs. Brown, Bettle, Dale, Hunt, Condict and Janeway. The minutes were read and approved.

The Secretary read the following letter to be sent to the New Jersey exhibitors:

SIR:—The New Jersey Centennial Commissioners have now under way the compilation of a book of their transactions since they were organized.

To make such a work complete and of permanent value, it is essential that a full share of its pages should be devoted to the State exhibitors, giving brief descriptions of the kind and character of the goods in each instance. Will you send us, at your earliest convenience, a short statement of the extent of goods and articles you exhibited, with such written reports or awards, if any, as were given by the Centennial Boards of Judges. Address

P. T. QUINN, Secretary,
Newark, N. J.

The letter was approved, and ordered to be sent to the exhibitors.

Mr. Brown reported that he had called upon Mr. Brown-

ing in reference to his address, and was informed that the supplemental portion was not completed, but would be forwarded very soon.

During the temporary absence of the President from the chair, and Commissioner Hunt acting in his place as chairman, the following resolution was passed unanimously :

Resolved, That a sufficient sum be appropriated for the purchase of a gold medal to be presented to our President, the Hon. Samuel C. Brown, as a testimonial and recognition of his long, arduous and self-sacrificing devotion to all the work of this Commission.

The matter was left in the hands of the mover of the resolution, Dr. S. B. Hunt.

The committee on the sale of the State Building and furniture therein, reported that several parties were now considering the purchase of the building, and that there was a fair prospect of its being sold within a few days.

The Board met in New York, at the St. Nicholas Hotel, December 1st, 1876, at two o'clock. Present—Messrs. Brown, Bettle, Dale, Hunt, Bird, Condict and Janeway. The minute book not being at hand, the Commissioners proceeded to consider the subject of selling the State Building, whereupon Messrs. Brown and Bettle were appointed a committee to make arrangements to offer the building at public auction, on the premises, the fourteenth day of December, and that the sale be announced through the State papers, and also in the Philadelphia papers.

A meeting of the Commissioners was held in Trenton, at the State House, on Wednesday, January 31st, 1877. Pre-

sent—Messrs. Brown, Bettle, Janeway, Condict, Dale and Hunt. The Secretary read the minutes of the two preceding meetings, which were approved.

The committee on sale of building reported that they had sold it to Isaac A. Braddock, of Haddonfield, N. J., for \$2,100, and that it would be removed to that town and re-erected and used for a town hall. The report was accepted with the hearty approbation of the Board, and much gratification was evinced that the beautiful State Building was to become a State possession.

Mr. Brown reported that responses to his circular soliciting statistics from manufacturers in the State, were not as numerous and promptly sent as was anticipated. The total received to the present time amounts to about \$100,000,000 of capital. He expressed the hope that more full returns would come in before the completion of the report.

Commissioner Hunt produced the gold medal that had been prepared pursuant to his resolution, passed at the November meeting, and, with a few remarks, presented it to President Brown, who replied as follows:

“GENTLEMEN AND ASSOCIATES—The sentiments you have expressed, and the testimonial token now placed in my hands, alike demand my highest esteem and grateful acknowledgment. I can with great sincerity reciprocate the kindly feelings so significantly conveyed to me.

“We have been associated together for nearly two years, and our official relations and social intercourse have invariably been harmonious, and, I have every reason to think, mutually agreeable and entirely satisfactory to our own circle.

“The Governor called us into the service of the State which we were glad to represent at the Centennial, and I am quite sure that our united endeavors to subserve her important interests thus entrusted to us have been conscientious.

tiously uppermost in our minds, and faithfully directed to that object.

“ I know of nothing relating to our action as a Board that is in any sense calculated to elicit self-reproach, or that was prompted otherwise than by a desire to advance the public and individual interests at the Exhibition committed to our hands.

“ The Exhibition has been a notable success, and our State, we believe, has derived innumerable benefits from it ; and I cannot doubt that each of us will never cease to experience real pleasure from recurring consciousness of personal participation in results to our State and the nation so universally satisfactory.”

The President read to the Commissioners sections of what he had prepared thus far to be embodied in the final report to the Governor. Both the plan adopted and the method of treating the subjects referred to were approved, and Mr. Brown was requested to proceed with the work thus commenced.

The Secretary gave an outline of the extent and variety of the agricultural section of the report he had prepared, which was satisfactory, and he was directed to finish the same.

The following resolution was passed :

Resolved, That Messrs. Brown, Dale and Hunt be appointed a committee to prepare a memorial to the Legislature asking the appointment of a commission to examine and report upon a plan to promote and utilize the manufacture of textile and ornamental fabrics in this State.

Messrs. Condict, Dale and Janeway were appointed a committee to audit the accounts of the President.

A meeting of the Commissioners was held at the State House, in Trenton, on Tuesday, February 20, 1877. Present—Messrs. Brown, Bettle, Dale, Hunt, Janeway, Bird and Condict. The minutes were read and approved.

MEMORIAL TO THE LEGISLATURE.

Dr. Hunt reported the following from the Memorial Committee :

To the Senate and General Assembly :

GENTLEMEN—The Centennial Commission of New Jersey present the following memorial, asking the appointment of a Commission to examine and report upon a plan to utilize and promote the manufacture of ornamental and textile fabrics in this State.

In the course of studies extending over a period of two years devoted to the investigation of our industries and manufactures, we have reached the conclusion that unskilled labor in New Jersey will never be the subject of any special change. Our value as a State depends upon the development of skilled labor.

It must be conceded that the agricultural resources of our State have not yet, by any means, reached the stage of their fullest development. The highest results of skilled labor in every department of agriculture are year by year becoming more remunerative, and this process continued will subdue and render productive the vast acreage within our bounds now in an unproductive condition. With so large a proportion of our territory in this condition, it should manifestly be our aim to adopt a policy, stimulated and promoted to a moderate extent by State aid, looking to the advancement of the two important wedded interests of our State, viz. : manufactures and agriculture.

Our destiny is to be a manufacturing and commercial State, and in the main a city of vast dimensions, a work-

shop for our own and other communities. This is a condition forced upon us by the fact that New Jersey is the highway between the inland and the sea, and that most of our future growth must be in the direction of skilled industry. We are already very largely a manufacturing community, embracing every mechanical industry of the lower grades prosecuted elsewhere throughout the country ; but our present endeavor is to the introduction of the higher grades, the successful production of which is attained only by machinery and skill.

The market for skilled labor is exhaustless. Our line of progress must be made in the direction of skilled manufacture. We therefore suggest as one of the results of the office to which we are appointed, that a law be enacted creating a Commission to examine and report to your Honorable Body, a plan for the promotion of skilled labor in this State.

In other countries, especially in Germany, special schools are supported by the government at very low cost, the result of which is and was intended to be, the equipment of a large class of people competent to self-support.

The variety of textile fabrics is almost without limit affording a wide range for artistic skill. They are a part of the industrial arts, and embrace designing of patterns as well as the preparation of the woof and the warp. They supply a class of industries suited to large numbers of both sexes hitherto to a large extent non-producers, who would gladly avail themselves of such alluring and elevating occupations.

We only propose the appointment of a Commission to devise a plan to be reported to your Honorable Body at another session, the report to include the statistics of skilled and unskilled labor, male and female, in the State of New Jersey, and the consideration of a plan for the encouragement of technological teaching in textile fabrics and designing, and

extending to other kindred pursuits, with the same object in view.

In such a project the double interests of agriculture and commerce are inseparable. To the one comes a market for the products and an occupation for the population; to the other the advantage accrues of a successful agriculture in close proximity to the workshops. The State has been wisely generous to her agricultural interests, but these depend to a very considerable degree upon the market which manufactures supply.

Respectfully submitted,

SAM'L C. BROWN,
SANDFORD B. HUNT,
THOMAS N. DALE,
Committee.

Trenton, February 22d, 1877.

PRELIMINARY REPORT.

Knowing that this report would not be completed before the adjournment of the Legislature, the following was laid before each House to indicate the character and extent of what was being prepared for publication, with the view to obtain authority to print the same; whereupon a resolution was passed by the Senate authorizing the report to be printed and distributed under the supervision of this Board and the Governor.

To His Excellency Joseph D. Bedle:

The Board of Centennial Commissioners beg leave to make a preliminary report on the Exhibition.

Until within a very short time they were in hopes of being able to complete their final report in advance of the adjournment of the Legislature, but they find it to be im-

practicable to do so and make it as comprehensive as they desire to have it.

The members of the Board regard this as an opportune occasion for giving prominence to some of New Jersey's undoubted advantages for becoming, at an early day, one of the first manufacturing States in the Union. With this in view, they desire to render their report, by its fullness of detail respecting our State exhibits and other collateral points bearing upon the future growth and prosperity of the Commonwealth, a means of hastening, if possible, her advancement in this scale of distinction.

New Jersey has maintained her sixth position in the list of manufacturing States not only, but her percentage of increase of products, from 1850 to 1860, was higher than either of the other six except two Western States, viz.: Illinois and Ohio; and from 1860 to 1870 Pennsylvania was the only Eastern State whose increase was greater, and two Western, viz.: Missouri and Illinois. It will thus be seen that the ratio of increase in manufacturing in our State has been steady and in excess of all the New England States and New York, and for twenty years has not been exceeded but by one, viz.: Pennsylvania. These are significant facts and worthy of more prominent consideration.

It has been a matter of deep regret with our Board, through the whole exhibition season, that they had nothing relating to their State industries and resources, to exchange with foreign and State Commissioners for valuable books and pamphlets which were freely distributed at the Centennial, the catalogues of our geological and mineralogical exhibit excepted.

It is not too late for us to supply this deficiency, and we assign this as one prominent reason for getting up a full and comprehensive summary of what was on exhibition from our State, with considerable detail; and we propose to furnish, also, much valuable information that will be of general inter-

est and probable value outside of our own boundaries, relating not only to our extensive manufacturing interests, but also facts and statistics new and of special import, pertaining to every branch of agricultural products which, in our State, are scarcely more than secondary to manufactures.

The following briefly indicates some of the contents of our final report :

Summary of preceding National and International Exhibitions in Europe and in our own country.

Quite full references to preliminary steps taken towards aiding the Exhibition; its organization and financial expedients; New Jersey's legislative action; the organization and proceedings of our State Board of Commissioners.

Tabulated statements of our manufacturing and other mechanical industries; agricultural and horticultural resources; annual productions from farm and garden lands; value of New Jersey's improved lands, with those of other States; indigenous woods, soils, fertilizers, clays and minerals; collective and individual exhibits from this State, with their recognized merits and accompany awards, fully set forth; Hon. Abram Browning's address, delivered at Judges' Hall, historical of New Jersey from her colonial days to the present, which, it is expected, will be illustrated with old and new maps of great historic interest.

It will be observed from the above synopsis that we intend our closing report upon the Centennial, so far as we are able to make it so, one of historic interest within our own State at least, for all time, and that it will consequently be very much in demand by exhibitors and others who were specially interested in the exhibition.

As the Legislature will have adjourned when this proposed report is ready for being printed, it will be needful that special authority be given to our Board to supervise the printing and distribution of the volume, at the expense of the State.

In this connection it is proper that we should refer to the financial aspect up to the present time. We have great pleasure in assuring your Excellency that we hope to return to the State treasury a very respectable unexpended balance of what was placed in our hands by the Legislature. Full details of our disbursements will be set before the Joint Centennial Committee of the present Legislature, and will also appear in the final report. It is deemed only necessary upon this occasion to state the totals of our receipts and payments, as follows:

State Appropriation to our Board	\$20,000 00	
Received for State Building		2,100 00
Received from some of the County Committees on account of the cost of agricultural exhibit		250 45
Terminal charges refunded		56 00
Received for fences		25 00
Total disbursements	\$20,590 47	
Cash in hand	1,840 98	
		\$22,431 45
		\$22,431 45

We think there is no impropriety in stating what is already well understood, that in all probability our State will receive possibly \$75,000 of her \$100,000, appropriated and invested in Centennial stock, in the form of a dividend.*

Surely such prospects are well calculated to enhance our gratification with what New Jersey was prompted to do in behalf of our one hundredth national birthday celebration.

Respectfully submitted,

SAMUEL C. BROWN,
President.

Trenton, Feb. 22, 1877.

* The Supreme Court at Washington reversed the decision of the District Court, thus reducing the State's dividend to about \$90,000.

A meeting of the Board was called and held at the office of Governor Bedle, in Jersey City, April 14, 1877. Present—Messrs. Brown, Hunt, Bird, Condict and the Governor.

The object of this meeting was stated by Mr. Brown to be the consideration of the question of printing the report in pursuance of the resolution of the Senate, authorizing the same to be done under the joint supervision of the Governor and the Board.

It was ordered that as soon as the report be ready, it should be placed in the hands of Messrs. Naar, Day & Naar, who were the authorized printers of the two Houses.

A meeting of the Board was held Monday, May 28th, 1877, at Newark. Present—Messrs. Brown, Hunt, Bettle, Dale, Condict and Janeway.

On motion it was resolved that five thousand copies of the report be printed subject to the approval of the Governor, and that the President and Secretary be authorized to distribute one copy each to the Foreign Commissioners to the Centennial, to the State Commissions, to the United States Commissioners and Board of Finance, to the members of Congress and United States Senate, to the members of the New Jersey Legislature and State officers, to the Editors of New Jersey newspapers, to all State, Public and College Libraries in this State, to Historical Societies in and out of the State, to each exhibitor from this State, one hundred and fifty copies to Governor Bedle and to each of the members of this Board.

On motion, the following preamble and resolutions were adopted, in the absence of the President and Secretary :

“WHEREAS, The Board of Centennial Commissioners of New Jersey are about to adjourn *sine die*, its members think it fitting that they should express the feeling of harmony which has pervaded their meetings, the unanimous action

which has attended every vote recorded upon their minutes, and the hope that their two years of conscientious labor may be approved, they would be negligent in duty did they not record their appreciation of the services of their President and Secretary ; therefore,

“ *Resolved*, That the services of President Brown have been constant, generous and competent; that we have always been pleasant in our intercourse, is largely due to his foresight in preparing our business and his courtesy in presiding.

“ *Resolved*, That, as the sense of this Commission, Mr. P. T. Quinn has discharged the duties devolving upon him as Secretary of this Board with singular fidelity and ability.

“ *Resolved*, That we have special reasons for referring to his marked efficiency in the display made by our State at the Centennial in the departments of Agriculture and Horticulture; and our congratulations are due to him for his valuable agency in the preparation of that part of our Report pertaining to those departments, and to exhibits and awards.

“ *Resolved*, That while our official relations and intercourse for two years have been uniformly cordial and indicative of mutual confidence, and are soon to terminate, we shall be glad to cherish for each other and perpetuate reciprocal sentiments of respect and best wishes for our individual health and prosperity.”

The Board concluded not to adjourn *sine die* until after their report was printed.

FINANCIAL REPORT.

The President presented the following statement of receipts and expenditures of the funds of the Commission, which was referred to the Auditing Committee previously appointed :

Receipts.

From the State,	\$20,000 00
“ Agricultural Committee,	250 45
“ Terminal charges refunded,	56 00
“ Sale of State Building,	2,100 00
“ Sale of fence,	25 00
“ Net sales of furniture,	332 28
	<hr/>
	\$22,763 73

Disbursements.

Cost of Building,	\$10,919 00
Prof. Cook's Geological Survey Exhibit,	4,609 55
Salary of Secretary,	2,437 50
Commissioners' expenses,	1,092 93
Printing,	805 64
Sundries,	682 96
Canvassing cities,	533 00
Postage on letters and circulars,	287 90
Office rent at Newark,	112 50
Expended on Agricultural Exhibit,	773 35
Cost of restoring ground in Park,	197 17
Cash returned to State Treasurer,	312 23
	<hr/>
	\$22,763 73

We have examined and compared the above account of S. C. Brown, with his vouchers, and find it correct.

THOMAS N. DALE,
N. W. CONDUCT, JR.,
HENRY L. JANEWAY.

Trenton, June 6, 1877.

FINANCIAL STATEMENT OF THE NEW JERSEY BRANCH OF THE
WOMEN'S DEPARTMENT.

The following report and table exhibits the amounts received by the New Jersey Branch of the Women's Department of the Centennial and the purposes to which the fund was applied :

TRENTON, January 24, 1877.

Mrs. Wm. L. Dayton and Mrs. John G. Stevens :

Owing to the continuous absence of your Treasurer, at your request I assumed the custody of the Women's Centennial Fund of New Jersey.

I embrace in the annexed statement the entire receipts of money raised under the supervision of the New Jersey Branch, or Organization, of the Women's Department of the Centennial Exhibition.

It will be remembered that the Millville amount was made just in advance of your appointments and the State Organization ; but to present the total of Women's Work in our State for this object, it is essential that this item should be included. This sum, with the Bridgeton, was wholly invested in Centennial Stock, and never came into our hands.

Another class of contributions will be noticed, which were apportioned, as stated, to the Women's Fund in Philadelphia represented by Mrs. Gillespie, and to the purpose of furnishing and maintaining the New Jersey "Headquarters" through the exhibition season.

And still another class, the whole of which was donated to the last-named purpose. The destination of each sum contributed will appear in the tabulated statement, and it is believed will correspond with the indicated wishes of the donors respectively.

The ladies, who have been instrumental in collecting together the liberal sums shown below, are surely entitled to

the gratitude of the citizens of the State at large, whose convenience and comfort at the "New Jersey Headquarters" were so signally promoted by these united contributions.

Very truly yours,

SAMUEL C. BROWN.

Money Received From.	Total Amount.	Invested in Centennial Stock.	Donated to Mrs. Gillespie.	Donated to State Building.
Millville.....	\$1,270 00	\$1,270 00	.....	.....
Bridgeton.....	2,150 00	2,150 00	.....	.....
Trenton.....	2,774 78	.....	\$1,146 11	\$1,628 67
Camden.....	2,554 33	.....	1,000 00	1,554 33
Salem.....	1,698 57	.....	.....	1,698 57
Burlington.....	1,250 00	1,250 00	.....	.....
Paterson.....	653 53	.....	326 76	326 77
Newark.....	1,000 00	.....	.....	1,000 00
New Brunswick.....	351 25	.....	.....	351 25
Jersey City.....	1,366 84	.....	683 42	683 42
Freehold.....	718 38	.....	.....	718 38
Somerville.....	483 00	.....	.....	483 00
Woodbury.....	114 00	.....	.....	114 00
	\$16,384 68	\$4,670 00	\$3,156 29	\$8,558 39
Sales of Furniture.....	.....	.....	.....	353 29
				\$8,911 68

Having examined the accounts and vouchers for the disbursements of the above sum of eight thousand nine hundred and eleven dollars and sixty-eight cents (\$8,911.68), we certify the same to be correct.

WM. L. DAYTON,
P. T. QUINN.

Trenton, January 24th, 1877.

NEW JERSEY EXHIBITORS.

As near as we can ascertain the total number of exhibitors from New Jersey was 502. The general and sectional catalogues issued by the Commission do not quite correspond;

and space having been allotted to a considerable number who surrendered it unused, makes it somewhat difficult to get a correct list.

Of the above number 260 were located in the Main Building, Machinery Hall and their Annexes. The number of articles embraced in these exhibits is stated at 32,816; their estimated value \$198,852, and the cost of placing them on exhibition \$88,013. These are interesting facts, and it is much to be regretted that the other departments of the Exhibition did not supply similar statistics, so that we could furnish a reasonable approximation of what our State expended in the interest of the Exhibition.

The following is a list of New Jersey exhibitors, as nearly correct as it has been possible to make it.

IN THE MAIN BUILDING AND MINERAL ANNEX.

Andover Iron Company,	Phillipsburg.
American Crockery Company,	Trenton.
Astbury & Maddock,	Trenton.
Allen, Horatio,	South Orange.
Armbreuster, John,	Camden.
Bullock, Charles,	Trenton.
Boynton, C. W. & Co.,	Woodbridge.
Bruder & Phillips,	Hoboken.
Barbour Flax Spinning Company,	Paterson.
Bowman, O. O. & Co.,	Trenton.
Baer, Frederick,	Paterson.
Bowers, James & Co.,	Newark.
Burnett, W. H. & R.,	Newark.
Cohansey Glass Company,	Bridgeton.
Condit, Hanson & Co.,	Newark.
Celluloid Manufacturing Company,	Newark.
Cole, Alexander,	Manumuskin.
College of New Jersey,	Princeton.

Canfield, F. A.,	Dover.
Cook, George H.,	New Brunswick.
Cumberland Tube Works,	Bridgeton.
Cumberland Nail and Iron Works,	Bridgeton.
Coxon & Co.,	Trenton.
Chester Iron Company,	Chester.
Clark Thread Company,	Newark.
Caswell, J. J. & Co.,	Newark.
Dod, S. B.,	Hoboken.
Davis, Isaac,	Trenton.
Dixon Crucible Company,	Jersey City.
Davy, W. O. & Sons,	Jersey City.
Deats, L. M. & Co.,	Pittstown.
Darrach, S. A.,	Newark.
Dowden, George A.,	Newark.
Dexter, Lambert & Co.,	Paterson.
Dale Manufacturing Company,	Paterson.
Duryea & Hallett,	Rahway.
Esterbrook Steel Pen Company,	Camden.
Ernst & Etterick,	Jersey City.
Empire City Watch Company,	Jersey City.
Edison, Thomas A.,	Newark.
Fehr, Julius,	Hoboken.
Frazer Lubricator Company,	Jersey City.
Forester & Kraenter,	Newark.
Falstrom & Touquest,	Newark.
Fortenbach & Sons,	Carlstadt.
Fay, C. J.,	Camden.
Farrington & Kinsley,	Rahway.
Gregory & Co.,	Jersey City.
Glasgow Pottery Company,	Trenton.
Greenwood Pottery Company,	Trenton.
Gloucester Gingham Mills,	Gloucester.
Genkinger, Adolph,	Newark.
Hinds & Sons,	Newark.

Holt, R.,	Paterson.
Heinisch's, R., Sons,	Newark.
Hanford, Theodore,	Jersey City.
Hampton, Cutter & Son,	Woodbridge.
Hall, A. & Son,	Amboy.
Hamil & Booth,	Paterson.
Isaacs, Frederick,	Newark.
Ivanhoe Manufacturing Company,	Paterson.
Jersey City Crucible Manufacturing Co.,	Jersey City.
Johnson, William, Hedenburg Works,	Newark.
Lowthorp, F. C.,	Trenton.
Leonhard, Theodore,	Paterson.
Lowrie & Tucker,	Newark.
Morningstern, P.,	Newark.
Morrison, E. H.,	Boonton.
Mercer Pottery Company,	Trenton.
Moore, Joseph H.,	Trenton.
McKay, Ferdinand C. D.,	Paterson.
Maunder, Henry,	Perth Amboy.
Mersereau, W. T. & J.,	Newark.
Meeker, D. M. & Son,	Newark.
McNeil, Irving & Rich,	Ellwood.
Meyenberg, S. N.,	Paterson.
Moore, George, Rose Hill,	Scotch Plains.
Neall, D. W.,	Camden.
Norfolk and New Brunsvick Hosiery Co.,	New Brunswick.
Newmann, R. & Co.,	Newark.
Ott & Brewer,	Trenton.
Ogden, Isaac,	Newark.
Osborn, Bennet,	Newark.
Passaic Zinc Co.,	Passaic.
Passaic Rolling Mill Company,	Paterson.
Parkhurst & Gridley,	Newark.
Pollock & Son,	Newark.
Pierson & Herman,	Newark.

Rutgers College,	New Brunswick.
Roebing, W. H.,	Trenton.
Rudolph & Walter,	Camden.
Roberts, Henry,	Newark.
Roberts & Havell,	Newark.
Romer & Co.,	Newark.
Reeve, R. H. & B. C.,	Camden.
Riley & Lynch,	Newark.
Rawbone, Thomas,	Newark.
Shippen, W. W.,	Hoboken.
Stevens Institute,	Hoboken.
Stevens Institute of Technology,	Hoboken.
Such, George,	South Amboy.
Speeler Pottery Company,	Trenton.
Sigler, C. & J.,	Paterson.
Schedler, James,	Jersey City Heights.
Scattergood, W. W.,	Rancocas.
Semple, Samuel & Son,	Mount Holly.
Stranger, William & Co.,	Paterson.
Stratford, Hoe & Co.,	Jersey City.
Tims, William,	Paterson.
Thurston, R. M.,	Hoboken.
Thomas, W. H. B.,	Mount Holly.
Thorn, Stephen S.,	Newark.
Tubular Barrow and Truck Company,	Jersey City.
Underwood, John,	New Durham.
Violet & Durloch,	Elizabeth.
Veteralien, John,	Plainfield.
Whitney Brothers,	Glassboro.
Ward, T. B.,	Jersey City.
Ward, J. F.,	Jersey City.
Wood, D. J.,	Hoboken.
Wales, W.,	Fort Lee.
Watson Manufacturing Company.	Paterson.
Wharton, Joseph,	Camden.

Whitaker & Skirm,	Trenton.
Wortendyke Manufacturing Comyany,	Wortendyke.
Washington Manufacturing Company,	Gloucester.
White, William,	Newark.
Wiss, J.,	Newark.
Wood & Haslam,	Camden.
Weidman & Greppo,	Paterson.
Young's, William, Sons,	Trenton.
Yates, Bennett & Allen,	Trenton.
Yates, Wharton & Co.,	Newark.

MAIN ANNEX.

Acquakanonk Manufacturing Co.,	Passaic.
Applegate, R. O.,	Camden.
Brittain, R. J.,	Newark.
Baldwin, J. & Co.,	Newark.
Bliss & Drake,	Newark.
Cadwallader & Fitzgibbons,	Trenton.
Consolidated Fruit Jar Company,	New Brunswick.
Caffrey, Charles F.,	Camden.
Calver, G. W. H.,	Columbus.
Cole & Ballard,	Newark.
Collyer, J. & Sons,	Newark.
Crane, S. O.,	Newark.
Derrom, Andrew,	Passaic.
French Paper Ware Company,	Springfield.
Hetfield & Jackson,	Rahway.
Hunt, William,	Camden.
Jones, P. & Co.,	Newark.
Lockwood, C. N. & Co.,	Newark.
Mason, J. L.,	Camden.
McDonald, T. E.,	New Brunswick.
Newark Tea Tray Company,	Newark.
Oppenheimer, S.,	Newark.

Searles, A.,	Newark.
Sipple, C.,	Newark.
Union County Manufacturing Co.,	Elizabeth.
Urmston, John,	Rahway.

MACHINERY DEPARTMENT.

American Saw Company,	Trenton.
American Engine Company,	Jersey City.
Adams, John & Co.,	Gloucester.
Atlas Manufacturing Company,	Newark.
Alcott, Thomas J.,	Mount Holly.
Bolen, Crane & Co.,	Newark.
Ball, C. A.,	Midland Park.
Barnett, Oscar,	Newark.
Clark Thread Company,	Newark.
Celluloid Emery Wheel Company,	Newark.
Chase, Pliny E.,	Newark.
Clark, John A.,	Newark.
Crabb, William,	Newark.
Cox & Sons,	Bridgeton.
Condit, Hanson & Co.,	Newark.
Cushing, N. B.,	Jersey City.
Clough & Williams,	Newark.
Danforth Locomotive and Machine Co.,	Paterson.
Denison, J. N.,	Newark.
Davis, A. J.,	Newark.
Doublet & Godley Motor Co.,	Camden.
Eureka Manufacturing Company,	Elizabeth.
Fisher & Norris,	Trenton.
Fish, Warren L.,	Newark.
Gould, Roscoe & Co.,	Newark.
Grosvenor, J. A.,	Jersey City.
Gruben, John P.,	Jersey City.
Goldie, George,	Princeton.

Griffith, D. G.,	Newark.
Harris, Clinton, S.,	Elizabeth.
Hawkins & Dodge,	Newark.
Havens, W. H.,	Paterson.
Hawrey, Henry F.,	Newark.
Hopkins, D. A.,	Jersey City.
Jersey City Iron Works,	Jersey City.
Jersey City Wheel Foundry and Ma- chine Works,	} Jersey City.
Johnson, William,	Lambertville.
Kelley, William E.,	New Brunswick.
Kenyon Brothers,	Raritan.
Kline, Aaron K.,	Somerville.
Kafer & DeLacey,	Trenton.
Kenyon, J. H.,	Plainfield.
Laferty, H. W. & R.,	Gloucester.
Lukins, J. W.	Burlington.
Mundy, J. S.,	Newark.
Meyer, F.,	Newark.
Meeker, D. M. & Son,	Newark.
Moore, W. B.,	Camden.
Mason, John L.,	Camden.
McChesney, R.,	Newark.
New York Needle Company,	Jersey City.
Ohl & Hauschild,	East Newark.
O'Shea, A. J.,	Jersey City.
Pierce, Milton P.,	Wenonah.
Pool, Alexander & Co.,	Newark.
Paterson Steam Fire Engine Company,	Paterson.
Phoenix Manufacturing Company,	Paterson.
Patent Water and Gas Pipe Company,	Jersey City.
Roebliug's, John A., Sons Company,	Trenton.
Rogers Locomotive Works,	Paterson.
Risdon, T. H. & Co.,	Mount Holly.
Richardson Brothers,	Newark.

Randolph, Theodore F.,	Morristown.
Smith, Oberlin & Brother,	Bridgeton.
Singer Manufacturing Company,	Elizabeth.
Shon, Mathias,	Camden.
Starr, Jesse W. & Son,	Camden.
Short, James,	New Brunswick.
Seymour & Whitlock,	Newark.
Smith, H. B.,	Smithville.
Spahn, E. P.,	Newark.
Smith, Charles B.,	Newark.
Stilwell & Pierce,	Newark.
Scotfield, Charles,	Vineland.
Schierloh, H.,	Jersey City.
The Whitney Manufacturing Company,	Paterson.
The Whitney Sewing Machine Co.,	Paterson.
Taylor Iron Works,	High Bridge.
Woodruff, James,	Rahway.
Wrigley, John,	Paterson.
Warren Foundry & Machine Company,	Phillipsburg.
Waldren, J. E., <i>J. & E. Waldren</i>	New Brunswick.
Walton, Silas,	Moorestown.
White, I. L.,	Smithville.
Wood, Joseph,	Red Bank.
Yule, George,	Newark.
Zimmerman & Brown,	Newark.

AGRICULTURAL DEPARTMENT.

Anderson & Campbell,	Camden.
Atkinson, E.,	Woodstown.
Atlantic Cranberry Company,	Weymouth.
Albright, Andrew,	Newark.
Ayers, James,	Allamuchy.
Bateman, E. S. & F.,	Blackwoodtown.
Brakely, Asher,	Bordentown.

Bushfield, W. H.,	Jersey City.
Brandenburg & Novell,	Newark.
Bowers & Stitzer,	Hackettstown.
Buckelew & Sons,	Jamesburg.
Bannihe, J. H.,	Egg Harbor City.
Burrough, E.,	Camden.
Barber, A. S.,	Woodbury.
Betts, Silas,	Camden.
Buttolph, Frank D.,	Morristown.
Baldwin, A. P.,	Newark.
Bergen, Samuel D.,	Camden.
Berg, Herman C.,	Rocky Hill.
Bell, Thomas F.,	Camden.
Bradshaw, Hestor,	Trenton.
Cotton, A. C.,	Vineland.
Camden and Atlantic Railroad,	Camden.
Collins, John S.,	Morristown.
Commerce, M.,	Jersey City.
Crique, James,	Newark.
Coe, J. C.,	Montclair.
Collins, E. Z.,	Waterford.
Cortlandt Wagon Manufacturing Co.,	Cortlandt.
Champion, Harrison,	Camden.
Cole, W. H.,	Camden.
Durand, E. W.,	Irvington.
Davey, W. O. & Son,	Jersey City.
Davis, H. S.,	Camden.
Diehl, John E.,	Beverly.
Diehl, Mrs. John E.,	Beverly.
Denton, William R.,	Newark.
Deacon, S. C.,	Moorestown.
Dowler, James H.,	Vineland.
Dodge, W.,	Vineland.
Dowler, William,	Vineland.
Dudley, Thomas H.,	Camden.

Dudley, Thomas H.,	Camden.
De Bonge, Charles,	Millburn.
Diehl, Edward H.,	Delanco.
Demerest, N. J.,	Newark.
Exton, Adam,	Trenton.
Eaton, W. C.,	Irvington.
Egg Harbor City Agricultural Society,	Egg Harbor City.
Ellis, S. F.,	Vineland.
Elmer, Daniel,	Bridgeton.
Fruit Growers' Trade Company,	Bordentown.
Fay, Cyrus J.,	Camden.
Fulton, Charles,	Hoboken.
Fowler, T. A.,	Orange.
Goodwin, W. F.,	Stelton.
Goetz, F. A.,	Jersey City.
Gulick, Edward,	New Brunswick.
Gardner, J. J.,	Atlantic City.
Gibson & Bennet,	Woodbury.
Gaunt, H. P.,	Gloucester.
Goodwin, Charles,	Vineland.
Gwynette, W. O.,	Vineland.
Grigg, T.,	Vineland.
Goodwin, W. F.	Stelton.
Hincke, Julius,	Egg Harbor City.
Hance, A. J. & Son,	Red Bank.
Hewit, John C.,	Pennsgrove.
Henryon, S. J.,	Newark.
Hillman, Roland & Sons,	Camden.
Hanes, John,	Moorestown.
Heytler, Frank,	Burlington.
Homer, Charles B.,	Mount Holly.
Hull, Theodore,	Newark.
Hoffman Brothers,	Lebanon.
Hanthorn, Isaac,	Vineland.
Hayt, James A.,	Paterson.

Howe, Edward,	Princeton.
Humphreys, Walter,	Newark.
Hanover, William,	Marlboro.
Johnson, T. Henry,	Bricksburg.
Jones, Phineas & Co.,	Newark.
Jerdiman, H.,	Irvington.
Jones, Isaiah,	Camden.
Kelly, William E.,	New Brunswick.
Kenyon, Silas R.,	Newark.
Kreuster, A.,	Newark.
Kennedy, Samuel,	Camden.
Lorillard, P. & Co.,	Jersey City.
Lister Brothers,	Newark.
Lane, Peter,	Mount Holly.
Leatherwood, M.,	Vineland.
Lienan, L. A.,	Jersey City.
Lowden, T. D.,	Burlington.
Mapes, C. V.,	Waverly.
Mabbet, T.,	Vineland.
Mills, B., Sons,	Jersey City.
Myer, B.,	Newark.
Mount, James K.,	Wrightstown.
Morse, Dudley,	Woodbury.
Monmouth Cranberry Company,	Farmingdale.
Mabbett, Furman,	Vineland.
Munsell & Dexter,	Elizabeth.
Mason, O.,	Vineland.
Muirhead, C. H.,	Titusville.
Mann, W. H.,	Haddonfield.
McGuire, James H.,	Trenton.
McPhearson, Daniel,	Caledonia.
Norton, James,	Hightstown.
Outcalt, John,	Spotswood.
Osborne, Aaron,	Middleville.
Pepler, Thomas,	Hightstown.

Pierce, M. P.,	Wenonah.
Patterson, William,	Salem.
Pressy, George W.,	Hammonton.
Pierpont, William,	Salem.
Porter, Joseph A.,	Camden.
Powell, Edward S.,	Camden.
Pentz, Jacob,	Newark.
Phillips, A. S.,	Trenton.
Pye, F. B.,	Trenton.
Randolph, Theodore F.,	Morristown.
Rue, J. Chambers,	Englishtown.
Rider, A. J.,	Atsion.
Ridgeway, Jessie C.,	Tuckerton.
Rogers, William,	Morristown.
Richards, A. W.,	Pleasant Mills.
Raymond, C. H.,	Morris Plains.
Russ, James,	Beverly.
Roach, J. C.,	Riverton.
Screw Mower and Reaper Company,	Phillipsburg.
Stratford, George,	Jersey City.
Slack, Mrs. J. H.,	Bloomsbury.
Shone, John,	Blackwoodtown.
Stryker, P. J.,	New Brunswick.
Snow, L. E.,	Woodbury.
Schimper & Immen,	Newark.
Speer, Alfred,	Passaic.
Schimper & Immen,	Newark.
Skinner, B. C.,	Vineland.
Swain Benjamin,	Vineland.
Smith, H. N.	Trenton.
Starr, Jesse, Jr.,	Camden.
Smith, Henry,	Paterson.
Thorn & Brother,	Trenton.
Tibbles, George N.,	Jersey City.
Taylor, C. S.,	Burlington.

Taylor, William S.,	Burlington.
Taylor, T. F.,	Colts Neck.
United Wine Growers,	Egg Harbor.
Underhill, F. S.,	Newark.
Underhill, M. T.,	Newark.
Vineland Fruit Association,	Vineland.
Van Deusen, C. C.,	Sprout Brook.
Van Fliet, J. C.,	Newark.
Vannote, G. H.,	Tuckerton.
Vallance, J. K.,	Beverly.
Wolbert, F. G.,	Jersey City.
Walton, Silas,	Moorestown.
Wyckoff & McDonald,	Hightstown.
Whittington, James,	South Amboy.
Woolston, Samuel,	Vincentown.
Wilbur, O.,	Vineland.
Wildes, George,	New Egypt.
Whitenack & Hall,	Somerville.
West Jersey Land and Cranberry Co.,	Ateo.
Williams, Charles P.,	Summit.
Wenzel, Max,	Hoboken.
Willigerod, Oscar,	Newark.
Zoller, A.,	Hoboken.
Zish, M.,	Vineland.

POULTRY DEPARTMENT.

Berry, John J.,	Hackensack.
Boppe, Frank L.,	Newark.
Diehl, John E.,	Beverly.
Diehl, Mrs. M. E.,	Beverly.
Diehl, W. T. S.,	Beverly.
Denholm, George,	Passaic.
Hale, Henry,	Ridgewood.
Harris, Edward,	Moorestown.

Holcomb, P. Q.,	Reaville.
Hafner, Lewis,	Newark.
Lowrie, H. H.,	Plainfield.
Lair, John,	Lambertville.
Martin, John,	Metuchin.
Magrane & Fairservice,	Newark.
Mann, Benjamin,	Haddonfield.
Mills, Daniel,	Gloucester.
Pennington, J. C. & D.,	Paterson.
Porter, Joseph A.,	Camden.
Russ, James,	Beverly.
Street, J. Fletcher,	Beverly.
Siefert, Oscar,	Newark.
Shourds, W. C.,	Camden.
Waefelaer, Lewis,	Hoboken.
White, Thomas W.,	Ridgewood.
Wilkins, John,	Masonville.

SHOE AND LEATHER DEPARTMENT.

Albright, Andrew,	Newark.
Bannister & Tichenor,	Newark.
Buerman, August,	Newark.
Celluloid Harness Trimming Company,	Newark.
Crane & Co.,	Newark.
Canfield, M. B. & J.,	Newark.
Costello, P. & P.,	Camden.
Carr, Edward,	Camden.
Dalsheimer, Leon & Brother,	Camden.
Graf, L. & Brother,	Newark.
Graf, Leopold,	Newark.
Howell, T. P. & Co.,	Newark.
Hawkins, Thomas H.,	Vineland.
Halsey, Samuel & Sons,	Newark.
Hedden, E. S.,	Milburn.

Heydecke, William,	Newark.
Kuenhold, F. B.	Newark.
Kafer & De Lacey,	Trenton.
Karr, William,	Karrsville.
Lagowitz, J. & Co.,	Newark.
Meyer & Richard,	New Durham.
Manning, Robert,	Newark.
Miller, McCullough & Ober,	Newark.
Moore, William B.,	Camden.
New Brunswick Rubber Company,	New Brunswick.
Osborne, C. S. & Co.,	Newark.
Osborne, H. F.,	Newark.
Peters, Calhoun & Co.,	Newark.
Peddie, T. B. & Co.,	Newark.
Romer, William,	Newark.
Reed, Harvey,	Vineland.
Saubier, H. & Sons,	Newark.
Simon, Edward & Brother,	Newark.
Smith, Hugh,	Newark.
Stengel, George,	Newark.
Strauss, M.,	Newark.
Star Rubber Company,	Trenton.
Tompkins, Samuel E. & Co.,	Newark.
Theberenth, Charles M. & Brothers,	Newark.
Wiener & Co.,	Newark.

ART DEPARTMENT.

Harrison, Henry,	Jersey City.
Moran, Thomas,	Newark.
Mayer, Charles,	Jersey City.
Perdicaris, Ion,	Trenton.
Spencer, Mrs. Lilly M.,	Newark.
Smith, G. B.,	Jersey City.
Slack, S. & Co.,	Orange.

HORTICULTURE.

Austin, R.,	Camden.
Bingham, Rudolphus,	Camden.
Dreer, Henry A.,	Riverton.
Gibson & Bennet,	Woodbury.
Henderson, Peter,	Jersey City.
Hance, A. & Sons,	Red Bank.
Merryweather, Ann E.,	Camden.
Such, George,	South Amboy.
Sturtevant, Edmund D.,	Bordentown.

PHOTOGRAPHY.

Doremus, John C.,	Paterson.
Gubleman, Theodore,	Jersey City.
Sibley, L. D. & Co.,	Vineland.
Semmendinger A.,	Fort Lee.
Reid, J. J.,	Paterson.

STATE AGRICULTURAL EXHIBIT.

Taking the census report of 1870 as a starting point in an agricultural survey of our State, we have in New Jersey four million seven hundred and twenty-eight thousand six hundred and twenty-eight acres of land. Of this area and dating at the same, there was in farms, gardens and small holdings two million one hundred and four thousand four hundred and seventy-four acres, besides seventy-five thousand acres of available tide marsh lands which may be included in the improved land of the State. This leaves a fraction less than half the land in the State unimproved, a large portion of which is in woodland, as may be seen from the following table collated from the census returns of 1870 :

COUNTIES.	Woodland. Acres.	Woodland in Farms. Acres.	Woodland not in Farms. Acres.	Percentage of total area in Woodland.
Sussex.....	160,000	67,673	92,000	50
Warren	61,000	27,758	33,000	28
Morris.....	176,000	73,000	103,000	57
Passaic.....	73,000	48,636	24,000	69
Bergen	61,000	25,719	35,000	41
Hudson.....	316	316	.....	1
Essex.....	22,000	6,221	16,000	21
Union	14,000	7,485	6,000	21
Middlesex.....	68,000	24,450	44,000	35
Somerset.....	36,000	14,507	22,000	18
Hunterdon.....	53,000	32,105	21,000	19
Mercer.....	29,000	12,032	17,000	20
Monmouth.....	125,000	36,882	88,000	43
Ocean	334,000	52,245	282,000	87
Burlington.....	335,000	67,022	268,000	62
Camden.....	103,000	34,805	68,000	59
Gloucester.....	56,000	14,830	41,000	34
Salem	84,000	22,696	61,000	38
Cumberland.....	215,000	41,269	174,000	65
Atlantic.....	312,000	92,506	220,000	86
Cape May.....	83,000	16,169	67,000	52
	2,400,316	718,335	1,682,000	

With the exception of Morris and Passaic, the bulk of the forest land in our State lies in the southern tier of counties, and south of the marl region. These general facts are given so that what follows may be more clearly comprehended, and our position as an agricultural producing State better understood. There is a very general want of correct knowledge among the citizens of other States, about the soil, climate and natural resources of New Jersey. Looking at our State from an agricultural point of view, farmers living outside of our State lines have the most fallacious ideas about the character of our soil for crop raising. Even now there are thousands of farmers who conscientiously believe that a large extent of the territory of our State is a sand bed, capable only of producing water melons and sweet potatoes, and so light that the wind blows it about like so much chaff. These unfounded fallacies are so commonly believed by those not familiar with the true state of the case that to attempt their refutation would seem a hopeless task even with facts and figures to make good the statements. Such misrepresentations and very false impressions about New Jersey have been floating about for a quarter of a century, and it is only within the past six or eight years that any general attempts from official sources have been made to correct these unjust stories about the "Jersey sand barrens." That there is a considerable area in our seaboard counties of this light, sandy soil, no one familiar with the State can deny. The trunk line of railroad crossing New Jersey passes over this section, and in this way strangers traveling over this route get the impression that the soil all over the State is of a similar character. But even with this soil light in body as it is, it is susceptible of improvement at an outlay that will come within the compass of every thrifty and intelligent farmer. There are hundreds of illustrations of this kind in Monmouth, Ocean and Burlington counties, where land of this sort has been

brought up, by careful and judicious handling, from an almost impoverished condition, to a state of high fertility, where it will and does annually produce maximum farm crops, and some of the best paying fruit farms in the State. The soil was originally of this quality. Every practical farmer knows, that there is such a thing, as spending more money on poor land, in the way of improving than the returns will ever warrant; of this character of poor soil New Jersey has very little even in the worst part of the State—sections which even our own citizens thought were incapable of improvement. But of late years this phantom has been dissipated, and parts that were looked upon as a barren wilderness have been transformed into productive garden spots, with towns springing up among the scrub oak and pines, that show success and thrift to the passers-by and afford independent and happy homes to thousands, where they enjoy social and religious advantages, good schools, good roads, and good markets for their produce. Noticeable among these new places are Egg Harbor City, Hammonton, Bricksburg, and, last and largest, Vineland. The soil surrounding each of these towns was, until recently, thought to be some of the poorest in the State, but by industry and perseverance, the whole has been changed, and now one can find growing, farm, garden and fruit crops, fair in quantity and quality on ground that a few years ago was tenanted only by scrub oak and pines. This desirable change has been brought about by no mysterious means, but by the application of skill and industry on the part of the owners or tillers of the soil. But this light sandy soil covers only a small fraction of the arable land of the State. In the northern and middle counties the soil varies in character from a sandy loam to that of a most tenacious clay, from which to realize the largest returns the use of under drains and the subsoil plow have to be brought into action. Take for instance wide sections

of Essex, Union, Warren, Sussex and Morris Counties, and they would but represent fairly specimens of thousands of acres that for agricultural purposes or fruit growing are fully equal to the very best land in any part of any State. In these counties, as in Camden and Monmouth, wheat, oats, rye, corn and barley are grown to perfection, and the yield under proper treatment is large and the grain of fine quality. Two years ago there were several competitors for the State premium for the best five acres of wheat offered through the State Agricultural Society. The first premium was awarded to a farmer in Monmouth county, who produced forty and one-quarter bushels to the acre, on the five acre lot. This statement came backed up by affidavits from thoroughly responsible persons. The second on the list had an average yield on the same quantity of ground of thirty-eight bushels to the acre. Either of these is more than twice the average yield of the wheat crop of the State. It shows, however, that by high culture, liberal manuring and a careful selection of soil, the point that can be reached on fair quality of land in our State. A still larger yield than either of those named has been produced the past season by Hewlings Lippincott, of Burlington, who had a ten acre lot in Fultz's wheat and the yield was $45\frac{1}{2}$ bushels to the acre, and the grain weighed $62\frac{1}{2}$ pounds a bushel. This variety of wheat seems to be well suited to our soil and climate, and will no doubt be more extensively sown when its qualities are better known than at present to our farmers. Besides this very large yield there were a number of farmers from other counties that reported an average yield ranging from thirty to thirty-five bushels of the same variety of wheat to the acre. Up to the time that the State offered premiums for farm crops, there were few even among the well informed on agricultural topics who believed one hundred bushels of shelled corn could be produced on an acre of ground. But this is now among the things that have taken place, and the doubters

can satisfy themselves that such is the case, for the facts are made good by the most convincing sort of proof. What appeared a few years ago as an impossibility is now a matter of fact, and the past season has added another item of interest to our farm literature, an item that will surely stimulate rivalry, and in this way lead to better systems of culture, more careful selections of both soil and seed; plans that will eventually raise the average yield of staples in our State far beyond the present acreage product. Mr. John Brown, of Lumberton, Burlington county, reports 123 bushels of shelled corn to the acre. This is the largest record of yield of this kind of corn that has come to our notice. Again, the average yield of potatoes in the State reaches only about 75 bushels, still it is very common for cultivators to produce annually from 250 to 300 bushels, and this by no mysterious means, but simply applying the rules of common sense in the preparation of the ground, choice of seed and proper care of the crop. These suggestions will apply with equal force not only to corn, wheat and potatoes, but to the entire list of farm and garden crops such as are grown for market purposes. Since the commencement of the publication of such facts about large yields in the annual reports of the State Agricultural Society, they have given a new and vigorous push to the farming interests throughout the State, and when such a ball gets well under headway there is no telling where it will stop. With markets at our door, good soil and climate, our State is sure to take a front position in farming, and more especially gardening, an industry that when intelligently directed always brings profitable returns. In this, as in the growth of fruits, everything favors Jersey farmers, and the sooner they realize this fact the better it will be for them. Of course when a farmer selects a spot of ground on which to settle permanently, the first thing to be learned is what sort of markets are within easy distance, and this

should govern his steps more or less in the shaping of his plans, and ought to be a guide to the class of crops to raise, so that the highest profits may be reaped. If, for instance, one is located near a manufacturing town or city where there is a steady demand for potatoes, cabbage, turnips, or small fruits, it would be child's play to still continue the growth of buckwheat and oats under such conditions, provided the land was susceptible of improvement. Adapting one's self to the existing surroundings seems positively necessary in this age to keep pace with the changes in farming as in other branches of industry. Another and a very important consideration should be taken into account by those about to purchase farming lands, and that is: the nearness to the large cities in any part of the State must always operate favorably to the rise in its market value of Jersey lands. These now stand at the head of the list in the scale of valuation, as a glance at the following table will clearly show:

AVERAGE ACTUAL VALUATION OF FARM LANDS IN THE SEVERAL STATES AND TERRITORIES OF THE UNITED STATES.

States.	Value per Acre.	States.	Value per Acre.	States and Territory.	Value per Acre.
Maine.....	\$18 93	Alabama.....	\$ 4 66	Kansas	\$15 96
New Hampshire..	22 34	Mississippi	6 22	Nebraska	14 58
Vermont	30 77	Louisiana.....	9 75	California.....	12 36
Massachusetts....	42 64	Texas	3 26	Oregon	9 35
Rhode Island.....	42 95	Arkansas.....	5 28	Nevada	7 12
Connecticut	52 54	Tennessee	11 17	Colorado	10 56
New York.....	57 35	West Virginia....	11 61	Utah.....	15 48
New Jersey.....	86 14	Kentucky	16 67	New Mexico.....	2 71
Pennsylvania.....	57 98	Missouri.....	18 10	Washington	6 12
Delaware	44 39	Illinois.....	35 56	Dakotah.....	6 89
Maryland	37 75	Indiana.....	35 03	Montana.....	5 22
Virginia.....	11 77	Ohio	48 56	Idaho	6 38
North Carolina...	3 94	Michigan	39 74	Arizona.....	7 39
South Carolina...	3 70	Wisconsin.....	25 64	Wyoming.....	4 18
Georgia.....	3 99	Minnesota	15 17	Indian .....	.....
Florida.....	4 19	Iowa	25 26		

Average for the United States and Territories, \$22.71.

The increase from 1850 to 1870 is as follows, and compared with the six other States gives a promising outlook for the future :

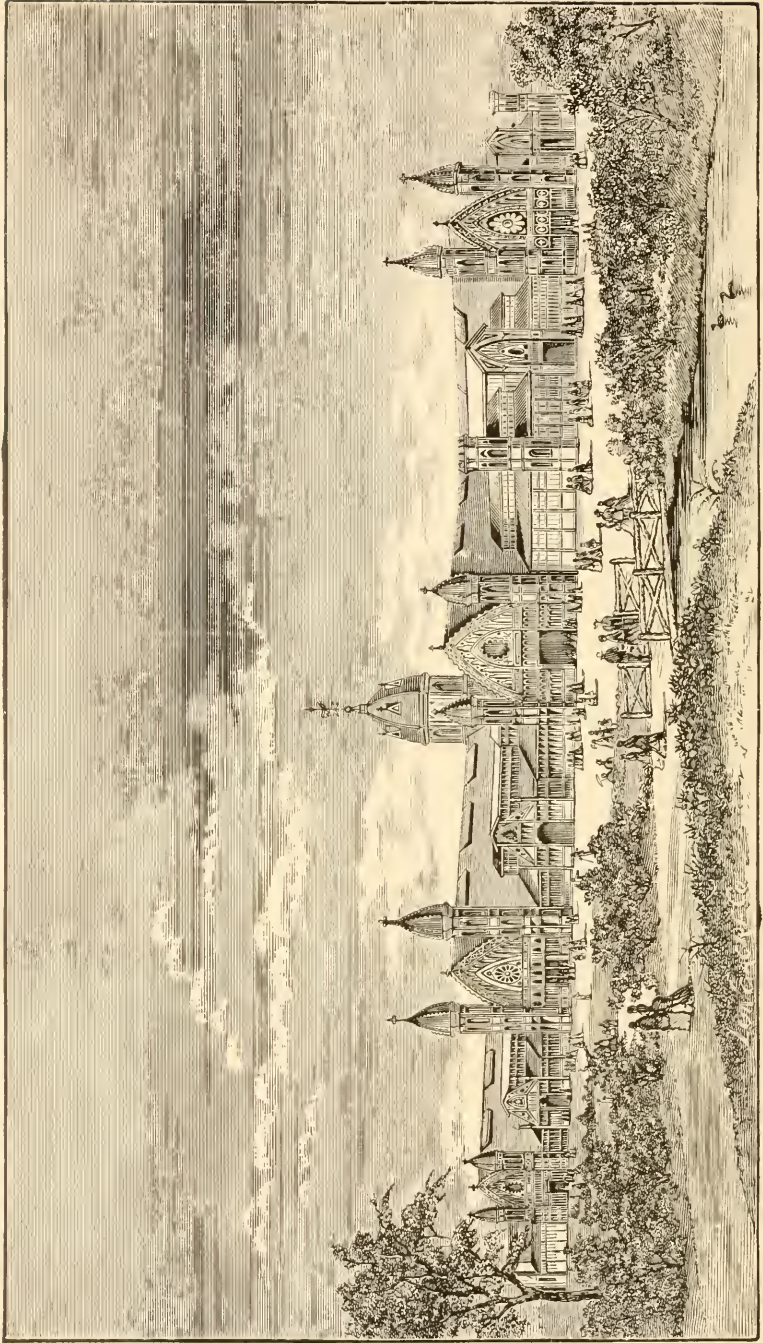
	1850.	1860.	1870.
New Jersey	\$43 67	\$60 40	\$86 14
New York.....	29 00	38 00	57 36
Pennsylvania	27 33	39 00	58 00
Delaware.....	19 75	31 00	44 40
Connecticut.....	30 50	36 00	53 00
Rhode Island	30 82	37 00	42 95
Massachusetts.....	32 50	34 00	42 64

This striking advance in New Jersey improved land over other States will surely be maintained in the future as it has been in the past, for the causes that have placed it where it now is will be as active in years to come as they have been in years gone by. The most distant parts of the State are within easy distance of markets, while in a few years there will be hardly a township that will not have a railroad running through it. This not only gives extra facilities for getting produce to markets and at low rates of freight, but also gives special social advantages, things that the western farmers are deprived of to a very large extent. Besides giving facilities for travel to the great commercial centers, these railroads offer favorable inducements to capitalists for creating manufacturing enterprises in locations where rents are comparatively low and freights to their warehouses a mere trifle. These factories or home markets always enhance the value of real estate in their vicinity, besides offering opportunities for the sale of produce direct to the consumer, saving the part usually paid to the middle-men, and materially increasing the profits of the farmers and gardeners situated near such places. It is singular, but nevertheless true, that such manufacturing towns are better markets to the extent of their demand

than the large cities, and there are hundreds of instances to make good the statement. At manufacturing centres like Newark, Paterson and Trenton, the average prices through the year will range from ten to twenty per cent. above those of Philadelphia and New York, for fruit and vegetables. When their factories are running on full time there are no complaints heard from the farmers in their vicinity of "hard times" and "low prices." On the contrary, produce of all kinds is in ready demand, and at rates that leave a wide margin for profit.

Already our State is prominent and has a National reputation for her manufacturing industries, and this will increase from year to year, a fact that should have some influence on persons who are about to purchase farming lands; and such reasons will hold good in the future as they have in the past. A close examination of the preceding table will show how far ahead New Jersey improved land is when compared with other States, and how much stronger are the inducements for persons in search of permanent investment to locate in New Jersey than in some other States.

A bushel of wheat, corn or potatoes has a money value of nearly twice the amount in New Jersey that they have in Illinois or Kansas, and this must remain so for years to come. The farmers of the west have to depend on railroads running long distances to the distributing points and are usually at the mercy of railroad monopolies. This does not enter into the Jersey farmer's calculation, for with rare exceptions there is a home market for every article of produce he has to dispose of. The freights on such as he may be compelled to send to the great distributing points of New York and Philadelphia amount to a trifle when compared with the market value of the produce. This proximity to market gives the owner of the land in New Jersey a choice, if he chooses, to grow a class of crops having a



AGRICULTURAL MALL.

higher market value than the ordinary staples, crops that, when they are cultivated as they should be, will bring three times as much from the same surface than can possibly be realized from grass or grain. There are now thousands of acres in the State devoted to this sort of farm gardening, as it may be termed, and there will be added to these more and more each year, until eventually a large share of the arable land of the State will be turned into this kind of tillage. The growth of vegetables and fruits for home markets is a branch of business that proves profitable when intelligently directed, and the sort that grows in dimensions, as the demands from the neighboring cities call for more of this class of produce. There seems no longer any doubt among those who are familiar with the farming interests of the State that the sooner we accept this inevitable change and prepare for it, the sooner will our farmers realize from their acres the highest profits. To do this with chances of success calls for an entire change in the routine, and calls for a system that will concentrate the manures on fewer acres, and the returns will increase in ratio with the capital and labor intelligently concentrated on those crops that have a much higher market value than ordinary farm crops, such as grass, corn, wheat, oats or buckwheat. But these crops only pay when grown on rich land, highly manured and thoroughly cultivated. Experience has long since demonstrated that there is no success in growing these crops with the loose, slipshod policy so often practiced in ordinary farming. Better not make the change unless it is followed up by thoroughness in every department. Two acres well manured and properly cultivated will yield more than three times that number half fertilized and imperfectly cultivated.

The subjoined table of estimates, taken from the census returns, gives the results in dollars and cents of the average

yield per acre of cultivated land in the counties, and also some few of the townships, where the products range from twenty dollars and upwards :

COUNTIES.	TOWNSHIPS.
Sussex	\$ 16 Sparta
Warren.....	17 Lopateong
Morris	16 Morris.....
Passaic.....	14 Manchester.....
Bergen.....	20 Saddle River.....
Hudson	177 East Orange.....
Essex	38 Union
Union	25 Madison.....
Middlesex.....	19 Franklin.....
Somerset.....	17 Tewksbury
Hunterdon.....	17 Ewing
Mercer.....	21 Holmdel
Monmouth	24 Plumstead
Ocean	24 Beverly
Burlington	27 Stockton
Camden	30 Deptford.....
Gloucester.....	32 Mannington
Salem.....	24 Landis
Cumberland.....	30
Atlantic.....	19
Cape May.....	15
State	\$21.60

This gives an average yield of \$21.60 from each acre of cultivated ground, which is a good showing; and it will be seen that in Hudson county, where market gardening is followed, the acreage product runs far above the others.

In certain parts of the State small fruits yield a fair average profit on the outlay, and in many instances the profits are even larger than one would suppose from the lack of practical knowledge by the beginners and many of the older growers. As a rule there has been a wide spread feeling of disappointment in the net results from the culture of small fruits, especially in those sections most distant from markets, and where the soil is of a light character. With strawberries grown on such light soil, without mulching, the fruit is seriously injured and often is sold for a

sacrifice, owing solely to the bad condition of the berries. This has been so general with fruit coming to New York markets from the southern part of the State that many growers became discouraged and abandoned the cultivation of strawberries as unprofitable and turned their attention to the growth of other crops. It is now becoming more apparant to every wide-awake cultivator that he who will undertake to raise strawberries for market must plant on rich soil, practice clean culture, and above all mulch the vines to keep the fruit clean, and sort the berries at the time of gathering. These conditions are positively essential to ensure success either in a small or large way, and it will be a waste of time and a loss of money in instances where any or all of these are neglected.

The truth of this statement can be verified in any township where small fruits are grown either for home use or market. In such a community there are always to be found one or more cultivators who take more pains in the choice of kinds and who give the soil better and more thorough preparation than his neighbors, and who keep up this same common sense method all the way through. The result of such a system is success in money making. There is a noticeable instance of this from Camden county this year, when E. Burrough, of Merchantville, cleared from a single acre of strawberries five hundred and seventy dollars and ninety cents (\$570.90), net. This, too, in a season when business was depressed and the price of fruit averaged very low—more so than any preceding year. The yield from the acre was 5,270 quarts of berries, and they sold at an average price of $13\frac{1}{2}$ c per quart, which gave a gross return of \$702.66 $\frac{2}{3}$, or net yield of the sum named above.

This is but one of many instances that might be given to show that high culture and intelligent management will yield even in a poor season profitable returns, even with strawberries at thirteen cents a quart, and it is proof, if such

were needed, showing what can be made from strawberry raising in New Jersey. Besides strawberries, there are large fields of raspberries, blackberries, currants and gooseberries grown in our State, all of them yielding more or less profit according to the location, proximity to market, and methods of culture that are practiced. The total amount from these crops is estimated from the most reliable authority within reach to a half a million of dollars, and surely this sum can be largely augmented in or during the next decade, and this, too, with corresponding profits to the grower, for, there is no doubt, large berries of good quality, coming into market freshly gathered, will always command higher prices than perishable fruit coming a long distance by railroad or steamer. All such suffer more or less on the way, and can never compete in prices with fruit raised within easy distance of where it is consumed.

The culture of the grape both for the sale of the fruit and wine making is having a steady and exceedingly healthy growth in our State. The planting of the vine on a more extended scale has of late years received great impetus from the success in different localities of small cultivators. While there would seem to be a limit to the bearing capacity of vines, and practical growers are always careful not to overcrop their bearing vines, still some of the records of yields of saleable grapes from vineyards in our State will compare favorably with those from any other State in the Union. The State premium committee on farm crops awarded the first premium the past year to the quarter of an acre of grapes, the yield of which was 3,300 lbs., or at the rate of a fraction over twelve tons to the acre. The second premium was given a grower near Red Bank. The yield from the quarter acre was 2,800 lbs. These are only a couple of instances to show what can be done in growing grapes by individuals who take pains and understand what they are doing. The most striking instance in our

State of the rapid and successful growth in planting the vine is that of Egg Harbor City, Atlantic county. Planting first began here some score of years ago, and has gone on steadily until the crop in the immediate neighborhood of this thrifty settlement will now average at least twenty-five hundred tons of grapes, and of a very superior quality. The whole of this bulk is made into wine. This wine, makers have no difficulty in finding a market for, at rates that makes grape growing in that vicinity one of the most profitable branches of industry, a branch that is rapidly increasing in Egg Harbor City and many other sections where the grape is being planted extensively. The light sandy loam of the southeastern tier of counties seems well adapted to the profitable growth of the *Concord*, *Hartford Prolific* and *Delaware* grapes, and those who start right seldom fail to make their investments pay a handsome per centage on the outlay. That there have been some disappointments in this branch of industry there is no doubt, but such have overtaken those who began with great expectations, such as realizing one hundred per cent. on their capital the first year's crop. This speculative profit not coming to pass, and very often from lack of practical knowledge on the part of the proprietor, the sales of fruit would not meet the outlay, giving treble cause for complaint and despondency on the uncertainties of horticultural pursuits as a sure means of gaining a livelihood. But when such cases are investigated by well-informed, practical men, they usually find the causes that produce these discouraging results, and they have no difficulty in tracing the blunders step by step leading to the downfall. These instances of failure not only in grape culture, but also with the pear, peach, and all the small fruits named, do not deter others from embarking in the same business, who with a practical training in their pursuit will, in eight cases out of ten, by close application, meet with success.

In agriculture or horticulture it ought to be understood by novices that experience and a practical knowledge of the business are quite as important steps towards a successful career as such would be in the manufacturing or commercial pursuits. This fact is usually overlooked by sanguine theorists who farm or garden on paper and balance their ledger account in their mind's eye. And there, and there only, do such meet with paying returns on imaginary investments.

The cranberry is now cultivated in our State on a large extent of surface, and with a higher standard of profits than in any other State in the Union. Although not yet two score years since the first attempts were made in Ocean county, in this State, on artificial bogs, the success has been so striking and the multiplication of these bogs in consequence so rapid, that there are now thousands of acres in the section of the State known as "the pines," yielding heavy crops of cranberries, that find a ready sale in market and at rates that make the investment a profitable one. This comparatively new branch of industry has this one advantage over others, that is, the reclaimed land on which the berry thrives is useless for other crops, and therefore each acre that is drained, sanded and planted with cranberries is adding an extra acre of fertile soil to help enhance the wealth of the State, and surely improves the condition of the owner. The projectors of this industry were wise on the start by forming an association of cranberry growers to watch over its interests and foster and encourage such methods and systems as would be most likely to promote the growth of this promising industry on a sound and substantial foundation. To attain this end the officers of this association have bent all their efforts since its formation five years ago, and already the seed that has been sown in this direction is ripening in many beneficial ways. Many of the growers who were lukewarm at first about joining

the "Cranberry Growers Association" are now enthusiastic in its praise. The good arising from the work of this body of cranberry growers is noticeable in a thousand ways. Among them may be named the adoption by its members of a uniform standard of measure for shipping the fruit to market, the collection of the experience of successful growers, and the distribution of this in printed form among its members, making the most profitable methods of laying out and planting bogs the common property of all. These, with measures to check the ravages of insects and disease, the appointment of a statistician to collect facts about the exact surface planted in each township and county in the State, and the annual product of the same, are but a few of the items that this energetic association have accomplished during the short time since its organization. There is another and very important step this society has taken, that in the future will accomplish all that its friends have ever predicted, that is, the formation of a company to introduce the cranberry into foreign markets. This attempt, if judiciously handled, is sure to be successful eventually. The bulk of the cranberry land lies in five counties; the sixth, as may be noticed by the accompanying statistical report, has only a few bogs. Mr. N. R. French, the pains-taking compiler of the following tables for the Cranberry Growers Association, says:

"I have made systematic record of the details obtained, so that errors may be easily discovered and corrected. Most of the facts admit of tabulation, and are presented in that form, showing results by townships, by counties, and for the entire State. The average of prices per bushel and of cost per acre are obtained by dividing footings by the number of lots represented therein, which, though not mathematically accurate, is thought near enough for practical purposes. The labor of strict calculations was greater than I could command time to accomplish.

“Cranberry growing is comparatively a new interest. The conditions of assured success have been very imperfectly understood. A full crop, any time during the last ten years, has yielded a very large per centage upon the capital invested—sometimes reaching, in individual cases, 100 per cent. The stimulus of these exceptional profits has induced much injudicious planting, and, consequently, much disappointment and loss.

“The acreage in vines and the crops produced are believed to be underrated in the tables. Some bogs have, no doubt, been overlooked, and some points I have been unable to reach or get information therefrom. Probably an addition of five per cent. to the acreage and to the crop of 1873; ten per cent. to the crop of 1872, and fifteen per cent. to the crop of 1871, would more nearly represent the actual facts. As we recede from the present, individual records are more fragmentary, and recollections more uncertain, or wholly at fault.”

TOWNSHIPS CLASSIFIED BY COUNTIES.	Total area set to vines.	On muck bottom.	On savanna bottom.	Vines set this season.	Vines set one year.	Vines set two years.	Vines set three years.	Vines set four years or more.	Average cost per acre in rough state.	Average cost per acre clearing, draining and planting.	Total investment on entire acreage three years from time of planting.	Crop, 1871.	Average price in market per bushel 1871.	Total market value 1871.	Crop, 1872.	Average price in market 1872.	Total market value 1872.	Crop, 1873.	Average price in market 1873.	Total market value 1873.
<i>Burlington</i> —Twp.	977½	42½	535	8	96	129½	84½	69½	\$11 00	\$123 00	\$154,933 75	6,365	\$3 25	\$20,686 25	8,511	\$3 00	\$25,533 00	15,374	\$3 00	\$46,122 00
Pemberton.....	210	88½	121½	45	79½	81½	85½	9 00	24,570 00	108 66	118,708 56	.....	.....	11,500	3 25	37,375 00	10,810	3 00	32,520 00	
Southampton.....	316	142	174	60	104	26	31	95	34 00	206 66	36,814 00	.....	.....	11,500	3 25	37,375 00	10,810	3 00	32,520 00	
New Hanover.....	158	97	61	41	20	25	72	18 00	215 00	166 00	30,000 00	.....	.....	11,200	3 15	35,280 00	11,200	3 00	33,000 00	
Woodland.....	397	140	65	45	63	13	6	209	23 00	166 00	30,000 00	.....	.....	11,200	3 15	35,280 00	11,200	3 00	33,000 00	
Medford.....	397	140	65	45	63	13	6	209	23 00	166 00	30,000 00	.....	.....	11,200	3 15	35,280 00	11,200	3 00	33,000 00	
Little Egg Harbor.....	73	65	8	.....	7	.....	.....	50	33 00	347 50	33,000 00	310	2 75	852 50	962	3 00	2,886 00	2,566	3 25	8,276 80
Totals and averages	2731½	1092	1039½	113	313	251½	293	1161	.....	.....	463,325 81	14,675	3 23	47,538 75	32,173	3 14	101,074 00	39,194	2 98	116,303 80
<i>Monmouth</i> —Twp.	36	30	6	5	1	.....	.....	30	68 00	422 00	1,980 00	.....	.....	3,000	3 00	9,000 00	3,600	2 75	10,005 00	
Wall.....	40	36	4	.....	4	.....	.....	36	40 00	133 00	1,720 00	700	3 30	2,460 00	3,000	3 00	9,000 00	4,000	1 00	4,965 00
Atlantic.....	166	144	22	33	15	83	35	43 00	257 00	.....	69,800 00	.....	.....	3,400	3 00	10,200 00	4,142	1 04	16,882 06	
Totals and averages	212	210	32	38	1	19	83	101	.....	.....	92,700 00	700	3 50	2,450 00	7,000	3 00	21,000 00	8,382	2 75	23,527 08
<i>Ocean</i> —Townships.	830	472	117½	3	6	20½	220	50 00	274 00	.....	103,200 00	4,208	3 50	14,728 00	4,579	3 33	15,254 33	57,310	2 79	15,907 86
Breck.....	219½	407½	232½	71	90½	100	378½	49 46	302 26	.....	258,924 80	5,660	3 30	18,678 00	8,148	3 35	27,295 80	20,333	3 00	60,900 00
Jackson.....	640	338½	100	26½	14	43	275	60 00	450 00	.....	193,175 00	9,714	3 80	36,913 20	9,297	3 15	29,285 45	11,288	2 77	31,297 76
Dover.....	178	141	37	15	11	150	33	33 00	216 66	.....	84,550 00	5,636	3 25	18,317 00	4,584	3 25	14,898 00	5,746	2 75	15,686 58
Manchester.....	101	46	55	33	13	17	38	33 00	216 66	.....	27,648 70	2,120	3 00	6,360 00	2,690	3 15	8,190 00	2,836	2 80	8,224 40
Plumsted.....	178½	178½	.....	.....	.....	.....	.....	122½	58 33	625 00	120,144 41	11,100	3 66	40,626 00	17,800	3 33	59,274 00	11,040	3 00	33,120 00
Stafford.....	51	39	15	.....	.....	.....	.....	54	38 33	425 00	27,889 82	565	2 83	1,429 15	1,510	3 25	4,907 50	2,556	3 00	7,068 00
Lacey.....	90	83	7	.....	.....	.....	.....	57	35 00	571 33	59,078 70	1,200	2 50	3,000 00	2,800	3 00	8,400 00	3,810	2 38	9,829 80
Union.....	189½	162½	564	148½	137½	268½	1295	.....	.....	.....	857,769 43	40,113	3 48	140,051 35	51,318	3 26	167,505 18	63,143	2 88	182,193 40
Totals and averages	121	121	.....	5	7	10	61	41	30 00	300 00	53,320 00	805	3 50	3,027 50	689	3 75	2,583 75	3,200	3 50	11,200 00
<i>Middlesex</i> —Township.	402	307	185	.....	.....	.....	.....	434	15 00	290 00	13,380 00	2,436	3 50	8,596 00	2,042	3 50	7,247 00	2,190	3 00	6,570 00
Atlantic—Township.	130	65	65	.....	.....	.....	.....	90	.....	.....	34,450 00	.....	.....	100	3 50	350 00	300	3 00	900 00	

† Total average cost per acre three years from planting.

* Natural, on which no investment cost is calculated.

Summary of Counties	Total area set to Vines.	On muck bottom.	On savanna bottom.	Vines set this season.	Vines set one year.	Vines set two years.	Vines set three years.	Vines set four years or more.	Average cost per acre in rough state.	Average cost per acre clearing, draining and planting.	Average cost of culture per acre for three years.	Total investment on entire acreage from time of planting.	Crop, 1871.	Average price in market per bushel 1871.	Total market value 1871.	Crop, 1872.	Average price in market 1872.	Total market value 1872.	Crop, 1873.	Average price in market 1873.	Total market value 1873.
Oceall.....	1849½	124	135	5	7	10	61	41	.....	.....	430 00	53,820 00	865	3 50	3,027 50	689	3 75	2,583 75	3,290	3 50	11,290 00
Ardflesex.....	124	307	135	.....	.....	.....	.....	.....	.....	.....	365 00	130,880 00	2,456	3 50	8,586 00	2,042	3 50	7,247 00	2,190	3 00	6,570 00
Atlantic.....	174	107½	107	.....	.....	.....	.....	.....	.....	.....	217 51	463,525 80	14,675	3 23	47,538 75	32,173	3 14	101,074 00	39,194	2 98	116,863 80
Roanoke.....	102	210	62	.....	.....	.....	.....	.....	.....	.....	383 65	92,790 00	700	3 50	2,450 00	7,000	3 00	21,000 00	8,382	2 75	23,368 68
Camden & Atlantic.	130	65	65	.....	.....	.....	.....	.....	.....	.....	295 00	34,450 00	.....	.....	.....	100	3 50	350 00	300	3 00	900 00
Totals and averages	4069	3423½	1895½	156	469½	425	793½	3122	.....	.....	4334 50	41062145 23	58,839	33 42	8201663 60	493,352	34 21	289,789 93	116,409	28 93	834,125 08

Total market value 1873, \$341,125.08. Less expense picking, marketing, etc., \$1.00 per bushel, \$116,406.00. Net income, \$224,719.08. This is 13½ per cent. on entire investment.

† Total average cost per acre three years from planting.

* Natural, on which no investment cost is calculated.

In a subsequent report to the Association, Mr. French says of the crop of 1875 :

“ At the meeting of this association a year ago there was a pretty full attendance, and the prevalent honest belief of those present, undoubtedly was, that the crop then about maturing, was very short, and would not equal that of the previous year. A month later, when a large part of the crop had been gathered and statements had come in from every section, I estimated the crop at 90,000 bushels—the same as the previous year. But from the above figures it now appears that New York received from the crop of 1875, 74,950 bushels, against 61,717 from the crop of 1874, making a gain in the New York receipts by the two roads, of 13,233 bushels, or over 21 per cent. This statement of receipts from the crop of 1875 is considerably below the fact, because the New York and Long Branch railroad went into operation that year, and brought, no doubt, some thousands of bushels of which there was no record.

“ We must conclude, therefore, that the last New Jersey crop was a good deal under estimated, for New York could hardly have drawn 75,000 bushels or more from a crop of 90,000.

“ The New England crop of last year probably did not exceed the estimate of 75,000 bushels. Only about 4,000 barrels came to New York, against 10,000 the previous season. The Western yield also justified the reports of a light crop, and the New York market was drawn upon largely to supply the deficiency.”

In an elaborate report made to the State Agricultural Society, and published by them, Mr. E. W. Crane, a practical cranberry grower, sums up as follows :

“ The cranberry district is situated in what is called ‘ The Pines,’ which, up to a quite recent date, had been but little cultivated, principally on account of the lack of railroad facilities for shipping the small fruits, to which a con-

siderable part of the soil is adapted, as well as for transporting the marl, which is for that section an invaluable fertilizer.

“The increase of these facilities within the last few years, together with the influx of both men and capital from various parts of this and other States, attracted by the remarkable success which in many instances has attended the cultivation of the cranberry, has made numerous and most favorable changes throughout this entire section, and portions that were once thought to be the most unpromising and worthless lands in the State, have become the most productive. Such results, however, have not been invariably attained, nor without the expenditure of much capital, study and labor, together with the exercise of good judgment and patience. But one side, however, would be told, were it not said that many failures have also occurred: the causes of many of these may be readily assigned by experienced growers, but some have occurred, against which, with our present knowledge, it would seem almost impossible to provide. A great deal has been learned within the last few years in regard to this branch of horticulture, but much still remains to be learned, and to accomplish this, to extend the market for the fruit, and to the improvement of their cultivated lands, many of the most thoughtful and prudent growers are now devoting their energies, rather than to extending their acreage of cultivation, fully believing that the experience and advantages thus to be gained will ere long enable them to renew their aggressive labors in their wild ‘bogs’ with much greater economy and certainty of success. That this view is correct I think there is little doubt among those who have given this and similar matters their earnest attention.”

LARGE FRUITS.

These include apples, pears and peaches, all of them well adapted to the soil and climate of New Jersey. Ever since the first settlement of the State there has been more or less of the best land planted with fruit trees, and when the owner displayed any knowledge in selecting the best sorts, and treated them with ordinary care afterwards, the results in nine cases out of ten have been of a most satisfactory kind, and has proved a good investment. The apple of the three kinds named has always taken the lead in acreage product, and in the hands of intelligent cultivators the raising of apples for profit or pleasure has usually been a success. In this, as in other productive industries, time has developed facts that wise men have taken heed of and changed their systems accordingly. Without any apparant causes certain old and favorite sorts that for years grew and bore abundantly, gradually began to give signs of degenerating, and some of these have entirely passed from the lists that do well, and the wide-awake orchardist gives such sorts a wide berth. But in the meantime other and equally good sorts have become popular as well as profitable to the cultivator who does not ignore the well-established fact that when a certain amount of plant food is drawn from the soil, either in the shape of corn, potato or apple crop, this has to be made up in some way or another, or else the yield is sure to fall off, and the results turn out unsatisfactorily as well as unprofitable. The neglect of this rule has been the cause, and sole one in many instances, in our State, of making apple and pear culture a losing business. But where the soil has been kept in good heart, with a good selection of kinds, it would be difficult to trace a case that resulted in failure. These have all followed poor culture and want of knowledge. The apples grown on the red killas soil of this State, although not quite as bright and

fair in color as the same kind grown in the West, still are far superior in quality for either table or culinary purposes. There are three or four kinds grown on the heavy clay soil in Essex and Union counties, among them the *Canfield*, *Harrison* and *Red Streak*, that make a cider with so much body and richness that it has gained almost a national reputation. Eating apples grown on the same soil gain in richness, becoming more juicy and crisp in flesh. This is found to be the case wherever the trees are planted on soil of similar formation in the State. Among the leading kinds of apples now grown in the State for profit may be named the following brief list, the majority of which were exhibited from Monmouth and Hunterdon counties at the State Centennial Exhibit:

Red Astrichan, Early Harvest, Baldwin, Smith Cider, Rhode Island Greening, Orange Pippin, Roxbury Russet, Maiden's Blush, Large Yellow Bough, Gravestien, Fall Pippin, Canfield and Porter.

The large size and high color of many of these sorts exhibited surprised thousands of visitors at the Centennial, who could hardly believe that such magnificent fruit could be grown in New Jersey, that, too, in such an adverse season. But there was no disputing the fact, for the fruit was there, and came from New Jersey.

The *Northern Spy, Maiden's Blush, Baldwins, Rhode Island Greening, Monmouth Pippin, Washington, Belle Fleur, and Twenty Ounce Pippin* were surpassingly large and fair in color, attracting unusual attention from fruit growers from all parts of the country.

The surface planted with pears is very much less than that devoted to the apple, or even the peach, in our State. There are some few old orchards of pears in parts of the State, but the bulk of the trees of this variety of fruit have been set out within the last fifteen years. Where the soil chosen was in good heart at the time of planting, and kept up to

the standard since, these young trees are looking well, and give promise of profitable returns on the outlay. But the paying time, in too many instances, has been postponed on account of selecting kinds that neither the climate nor the soil were congenial to, and this fact is often learned when the trees are six or eight years in place. Other and better sorts have to be put in their place, by grafting and budding, thus delaying the long-awaited for bountiful crop of full sized specimens. Another and common mistake is to plant sorts that grow and bear well, but have no standing in market, and command no prices, beyond what they are worth for cooking pears. These, too, with the still graver mistake of planting dwarfs, instead of standards. This last named is the worst error of all, for the remedy that may easily be applied to either one of the other named cannot to this one, and the owner has to console himself by reading what nurserymen say can be produced on dwarfs, and waiting patiently for something to turn up; and in these cases, patience usually becomes tired of the task. In the garden where only a few trees are wanted, and the space is limited, dwarfs under high culture and constant watchfulness tickle the fancy of the owner by the yield of some large specimens of fruit on small sized trees; but for orchard culture when trees are planted with a view to profit, then by all means plant standards, and give dwarfs a wide berth. Farmers have been misled often and long enough by this fallacy of planting dwarfs for profit. It is high time that those not familiar by experience with pear culture, should appreciate that it will amount to failure in nine cases out of ten, and as a rule, one healthy, vigorous standard will yield more marketable fruit than a dozen dwarfs of the same age. One of the threadbare arguments in favor of planting dwarfs, is the fact of their early bearing. Those familiar by experience with fruit raising for profit, know how injurious such a system must be on young trees, when allowed to bear fruit while

still young. Little or no fruit should be allowed on the trees, before they are six or seven years in place, the roots well established and surface enough in that growing or wood-making period to yield paying crops. Then, and then only, will the well informed allow fruit trees to bear. Too early fruiting is sure to stunt the trees, and cause early marks of decay and permanent injury.

Among some of the best kinds to plant as standards, fine representatives of the fruit of which were shown at the Centennial Exhibition from our State, may be named the following list :

Buffam, Beurre Gifford, Doyenne d'Ete, Bartlett, Doyenne Bossuock, Clapp's Favorite, Seckel, Duchesse d'Angouleme, Beurre Bose, Beurre Clairgeau, Beurre d'Anjou, Lawrence, Dana's Honey, Quinn.

These are good varieties, and are grown, more or less, in every county of the State, and in some localities in a large and profitable way, with a steady and healthy increase of land devoted to the production of pears as a source of profit.

The lack of practical knowledge has misled many beginners, and has been the cause of innumerable failures in pear culture. Experience, however, in time will correct this, and finally lands one on the right road to success. This method occasions outlay, and calls for patience and considerable perseverance.

But the malady of all others, in raising pear trees, that has the most discouraging aspect, is that known as "*fire blight*"—a destroyer that respects neither age, kind, or vigorous habits. While there are some well-founded theories about the cause of this terrible disease, there has not as yet been discovered either remedy or cure that has amounted to anything in checking its ravages in orchards where it has made its appearance. The only consolation there is, if such it may be named : that its visitations are at long intervals, and not infrequently its stay is only for a year or

two in the orchard at a time. In many of the older pear orchards *fire blight* does not appear oftener than once in from twelve to twenty years; but when it does come, it makes sad havoc with the largest trees in the orchard.

PEACH CULTURE.

The culture of the peach in our State is not now as extensive as it was a score of years ago. Then some of the largest and most productive orchards in the country were grown in this State. There followed this a term of eight or ten years, when there was an absolute failure in peaches in every part of the State. Trees planted under the most favorable auspices would barely sustain life for three or four years, when unmistakable signs of failing and decay would set in, and a disease known as the "*yellow*s" would send the trees to the brush heap. This became so general that planting large orchards was for a time abandoned throughout the State. But this condition of things soon disappeared, and for the last six or eight years peach growing has been on the increase in New Jersey, and with very flattering results. The orchards have the general appearance of vigor and thrift, and owners find it a profitable investment, planting one hundred and eight trees on an acre. They do best on a light soil. The outlay for preparing and planting an acre is small when compared with pears, and the returns come much sooner. The leading kinds that are cultivated in orchards for profit in our State run about as follows, with some variations to suit soil and climate :

Large Early York, Crawford's Early, Crawford's Late, Honest John, Morris County Rare Ripe, Stump the World, Old Mixon Free, Mountain Rose, Smock and Keyport White.

Fine specimens of these kinds were shown at the Centennial Fruit Exhibition from time to time through the season, and their size, high color and rich flesh attracted

very general attention from the throng of visitors constantly in attendance. With the varieties ripening late in the season growers find more profit, for they do not suffer so much from competition with kinds from Delaware and Maryland, where the bulk of the peaches are now produced for the northern markets. But the fact of the great success in peach growing in Delaware and Maryland does not deter horticulturists in our State from planting extensive orchards with a view of a profitable investment, and there are scores of instances to be seen in the peach regions where men who have invested in this branch of industry recently, and their undertakings have been crowned with success. The disease that was almost fatal to peach trees in our State has disappeared as mysteriously as it came, and now, as mentioned above, orchards have that same thrifty appearance of health and vigor that was so universal throughout our State with peach trees a quarter of a century ago, when raising this fruit for market was a leading and profitable business.

FARM IMPLEMENTS.

The high price of unskilled farm labor in this State for the past fifteen years has turned the minds and ingenuity of intelligent farmers and inventors to overcome this practical difficulty by a more general use of improved labor-saving machinery. To those who have given their attention to this matter it is clear beyond doubt that to realize the largest returns at the smallest outlay and keep the land in good heart, machinery will have to take the place of hand labor to a very large extent. There is an over-abundance of good farming lands within our boundaries that can be bought at reasonable rates. Manures of all grades of richness can be purchased at comparatively low rates, but manual labor is the stumbling block in the pathway of

success. This obstacle can only be overcome by a judicious investment in farm machinery in districts where such can be worked to advantage. Of the feasibility of this plan there is only one opinion held by our intelligent husbandmen, and not only do they believe in the theory, but according to the most accurate information attainable, they have put their theories in practice, and in this respect have made marked and striking advances in this direction, as may be seen by the fact that there is now invested in farm implements and farm machinery in our State the sum of seven million eight hundred and seventy-seven thousand nine hundred and ninety-one dollars, (\$7,877,991), or at the rate of (speaking in round numbers), four dollars (\$4.00) for every acre of improved land in the State. This is, according to the figures collected at the Department of Agriculture, the largest with a single exception of any agricultural State in the country. This is a promising exhibit and is likely to be followed up with still more energy in the same line, for there is nothing so convincing to farmers as practical field tests to induce them "to go and do likewise." This method of culture has, no doubt, helped materially to raise the acreage product of our improved land to the sum of twenty-one dollars and sixty-one cents, (\$21.61), and if we include every acre of farm land in the State we have a return from them of fourteen dollars and twenty-nine cents, (\$14.29). This makes a good showing from land that our neighbors jest us about as "a sand barren," &c., &c.

While our methods are in many sections of the State, slovenly, careless and faulty, and lack that system and method by which so much is gained, still there is a very noticeable improvement everywhere throughout the State, over that practiced only a few years ago, and once this sort of improvement sets in, the tendency is onward, and no backward steps need be apprehended.

Another and important fact is that as fast as the population of our State grows denser, the size of the farms is lessened. There follows, as a natural consequence, a more thorough system of tillage, heavier manuring and larger acreage products from the labor and capital applied to such land. In 1850 the total number of farms in the State were 23,905. Ten years later, in 1860, these have increased to 27,646, and at the time of the last census, in 1870, we had 30,653 in all. As the farms increased in numbers the average size of each has a corresponding falling off. In 1850 the average size was 115; ten years later 108, and in 1870 they show an average of only 98 acres to each of the 30,653 farms in the State. A careful examination of the following table will show more forcibly the noticeable change for the better that has taken place in our State from 1860 to 1870, and there seems no reason to suppose but that, with our growing industries, there will be a still more marked improvement take place by 1880:

	1860.	1870.
The number of houses to one hundred inhabitants.....	11	8
“ “ “ milch cows “ “	20	13
“ “ “ oxen and other cattle “ “	14	7
“ “ “ sheep “ “	20	13
“ “ “ swine “ “	35	15
“ “ “ bushels corn to one hundred inhabitants.....	1,446	965
“ “ “ “ wheat “ “	262	254
“ “ “ “ oats “ “	675	442
“ “ “ tons of hay “ “	757	5,761

The total aggregate of staples in our State, as elsewhere, varies somewhat with the season and methods of culture. When we suffer, as we did last year (1876), from a protracted drought of six weeks duration, the acreage is considerably lessened. But with an ordinary season, such as we had in 1875, the following table will give the proximate amount of land under culture in our State, the yield per acre and its market value:

	Total amount.	Yield per Acre.	Acres.	Value per Bushel.	Total Value.
Indian Corn.....	12,420,000	39.5	307,392	62	\$7,528,040
Wheat.....	1,680,000	13.5	124,444	1.73	2,906,400
Rye.....	454,000	13	34,933	88	399,520
Oats.....	3,076,000	27.4	112,262	48	1,476,480
Barley.....	6,500	23.5	276	92	5,980
Buckwheat.....	277,000	15.5	17,870	1.00	277,000
Potatoes.....	2,951,000	75	39,346	87	2,567,370
		Tons.	Tons.	Per Ton.	
Hay.....		1.15	314,782	\$31.60	11,439,200
					26,599,990

While this table shows a fair average when compared with that of other States, both in yield per acre and value of the same, it is trifling when placed along side of individual instances where the product per acre is more than three times as great as that shown in this table. It goes to demonstrate, however, how much more our soil is capable of doing when taxed to its fullest capacity, and the encouragement there is for better modes of culture than are now in general practice among our farmers. There is an erroneous notion among many that the acreage product of the agricultural Western States is much larger than our own, and that the market value of the staples is about equal to what they are with us. The Department of Agriculture at Washington prepared a table in 1873, showing the relative yield and prices for the same in New Jersey, Minnesota Kansas and Illinois. They are as follows:

	CORN.		WHEAT.		TOTAL AVERAGE.
	Bushels per Acre.	Price per Bushel.	Bushels per Acre.	Price per Bushel.	Cash value per Acre.
New Jersey.....	36	75 cts.	18	\$1 54	\$29 35
Minnesota.....	37	44 cts.	11	1 00	11 56
Kansas.....	40	29 cts.	15	1 13	13 10
Illinois.....	38	32 cts.	12	1 18	12 95

This comparison tells the tale, and in a few words, as to the value of the staples within easy distance of good markets as we are, or to be in a position where the railroads have the producers at their tender mercies. The value per acre of fruits and vegetables would show still more strikingly in our favor; for with perishable products having a much higher value, the closeness to market is a very important consideration, and one that must from natural causes act in favor of the husbandman of New Jersey. As cities and towns multiply, within our boundaries, or on our borders, the demand for fruits and vegetables will increase, adding as it will largely to our population comfort and wealth as a people.

LIVE STOCK.

In the exhibition of horses, cattle, sheep, swine and poultry our farmers made a very creditable display of stock that was noticeable for their fine points and pure breeding, and they stood the test of comparison in a very favorable light, and were a credit to their owners, as well as the State they hailed from. This interest is an important one with us, as may be seen by consulting the subjoined table giving the approximate number and value of the animals now owned in the State:

	Number.	Average price.	Total Value.
Horses (1873).....	115,700	\$127 21	\$14,718,197
Mules.....	14,900	144 81	2,187,669
Oxen and other cattle.....	84,800	32 43	2,750,064
Milch Cows.....	147,900	44 16	6,531,264
Sheep.....	125,900	4 96	624,464
Swine.....	164,700	9 25	1,523,475

The total value of the live stock here enumerated sums up \$28,335,133. A fraction more than half of this sum is

invested in horses—an interest that is growing in magnitude and importance in our State, especially roadsters or gentlemen's driving horses, for which there is a good demand, and that, too, at profitable rates for those engaged in raising horses for this market. Besides, there is a thriving business carried on in breeding and raising heavy draught and farm horses, many fine specimens of which were on exhibition at the horse exhibition held in connection with the Centennial Exposition in Philadelphia.

All of these different industries that have been referred to are important in illustrating what we have done and are now doing, and the natural advantages we possess over our neighbors, both in climate, soil and proximity to market. But to keep up the fertility of the soil at the lowest expense is the main feature after all. In this, too, our people are specially favored, in the inexhaustible beds of marl found in the southeastern tier of counties, those lying along the seaboard. Where the soil is of a light, sandy character, this land has been vastly improved by the application of liberal doses of marl. In fact, some of the poorest quality of land in the State has been brought up to a high standard of fertility by marl. This seems singular, too, for on the heavy clay soil of the northern and middle sections of the State marl has given no results worth mentioning.

Monmouth county is a fair sample of what marl has done in changing the whole character of the county from a very indifferent, poor, thin soil to what it is at present—one of the most productive in the State. It is now about half a century since the introduction of marl as a fertilizer, and from an approximate estimate of the different marl pits the annual deliveries now amount to about 2,540,000 bushels. This, of course does not include a large bulk that is carted from private pits, where there is no record kept. The analysis of a good specimen of marl shows the following results:

Phosphoric Acid.....	4.67
Sulphuric Acid.....	0.51
Silicic Acid.....	52.70
Carbonic Acid.....	0.00
Potash.....	3.81
Lime.....	5.52
Magnesia.....	2.70
Alumina.....	3.66
Oxide of Iron.....	15.92
Water.....	6.40
Total.....	100.89

For a long time the results coming from the application of marl were solely attributed to the potash it contained. But this now is known to be only part true, for there are other constituents found that have a higher value than potash.

The first chemist who published an analysis of marl that disclosed the presence of phosphoric acid was Dr. Enderlin, a German experimenter, in New York city. He was a friend of the late Prof. Mapes, and that enthusiast in agricultural science hailed the discovery with more joy than if ten per cent. of silver had been found in it. With reason. No discovery could be of more importance to the race than that of an unlimited supply of phosphorus. We can flourish without silver. We can be rich and never see gold. But phosphorous means bread, and bread means strength, and life, and joy, and hope, and progress for the race.

Mr. Bossingault, a distinguished French experimentalist, took the clover that grew on an acre, dried and burned it, then analysed the ash. He found it had removed in pounds as follows—of phosphoric acid, 18; sulphate, 7; lime, 70; magnesia, 18; potash, 77; silica, 15; oxide of iron less than one pound.

A load of Squankum marl perfectly dissolved and mixed with the soil of an acre, would give for a clover crop, of lime sixty odd pounds, not quite enough; of phosphoric acid 70 pounds, thrice too much; of magnesia 40 pounds,

about twice as much as the clover uses; of potash 75 pounds, just the required amount; of silica 1,000 pounds, while only 15 are used; and of oxide of iron 320 pounds, only one being required. The marl has given no salt, of which the clover crop needs 7 pounds. In this way it is easy to arrive at the value of marl as a fertilizer. Add 50 pounds of potash and 10 of salt to a load of marl, and you have a fertilizer which is good for a crop of 150 or 200 bushels of potatoes on an acre. Add lime and a little salt and you have a special fertilizer for clover.

The following table gives a list of the names of exhibitors, their addresses, and the names of the articles, in the Agricultural Department of the New Jersey State Exhibit in E. 17, Agricultural Hall. There are some names omitted, because the Secretary of the State Commission has been unable to get them from the county officers who had charge of collecting the cereals and agricultural products. Every effort has been made on the part of the Commission to give a complete list of the contributors to the agricultural exhibit, which for its extent and quality of the articles exhibited was fully equal and in many respects superior to other similar exhibitions from other States.

NAME.	County.	Corn.	Wheat.	Oats.	Barley.	Potatoes.	(Truss Seed.	Flour and Meal.
Mrs. Huff.....	Somerset.....		Red.....		Buckwheat.....			
Paul Ains.....	Gloucester.....		Red.....					
W. F. Banks.....	Gloucester.....		Red.....					
J. C. Thompson.....	Monmouth.....		Seneca white.....					
F. L. Hendrickson.....	Monmouth.....		Fultz's.....					
Edward Jewell.....	Mercer.....			Superior.....				
A. S. Holcomb.....	Mercer.....			White.....				
A. Johnson.....	Somerset.....		Clawson.....	Black.....				
Martin Smith.....	Hunterdon.....	Yellow round Seed.						
James Pacosta.....	Camden.....							
Dr. J. C. Thompson.....	Monmouth.....		Key's amber 30 bush's per acre.	White.....				
John Brown.....	Burlington.....							
J. H. & J. W. Coles.....	Camden.....	Yellow.....		White.....				
Paul Ains & Son.....	Gloucester.....			White.....				sifted Indian Meal.
J. H. Dease.....	Monmouth.....		Fultz's.....					
Joseph Carter.....	Gloucester.....	Yellow, 123 bush's per acre.						
John Brown.....	Burlington.....		Mediterranean.....					
Howard Ridgway.....	Mercer.....		Red.....					
John Jewell.....	Mercer.....		Red.....					
J. H. & J. W. Coles.....	Camden.....		Eureka, 35 bush's per acre.					
Peter J. Brown.....	Sussex.....	Yellow, 75 bush's per acre.						
Samuel Moore.....	Gloucester.....		White.....	White.....				
Wm. M. Huff.....	Sussex.....		Amber, 32 bush's per acre.					
John D. Rue.....	Mercer.....							
Jesse Anderson.....	Camden.....	White.....						
Hon. Samuel A. Dobbins.....	Burlington.....		Fultz's.....					
James S. Roberts.....	Burlington.....		Clawson.....					
George T. Haines.....	Camden.....		White.....					
John Dunn.....	Somerset.....		Amber.....					
John B. Collins.....	Burlington.....			White.....				
Dr. J. C. Thompson.....	Monmouth.....							
E. Coles & Son.....	Salen.....							
J. L. Griggs & Son.....	Burlington.....							

M. Smoek.....	Monmouth.....	White.....						
State Agr. College Farm.....	Middlesex.....	Yellow Dent.....						
Paul Ails.....	Gloucester.....							
J. W. Coles.....	Camden.....	Yellow Dent.....						
Joseph A. Warriner.....	Gloucester.....	Jennings white.....						
F. S. Holcomb.....	Camden.....	Carson.....						
J. Van Wert.....	Somerset.....	Red.....						Barley.....
Joseph P. Reed.....	Mercer.....							
J. Woodward.....	Monmouth.....	Red.....						
Geo. Misner.....	Mercer.....	Sussex.....						
John V. Terhune.....	Burlington.....	Woodruff.....						
John S. Collins.....	Burlington.....	Sugar.....						
Samuel S. Maderia.....	Gloucester.....	Early White.....						
Richard Collins.....	Camden.....	White.....						
J. L. Gibbens & Son.....	Burlington.....	Red.....						
Paul Ails & Son.....	Gloucester.....							Extra Rye.....
E. Coles.....	Salen.....							Wheat family flour.....
Hewlings Lippincott.....	Burlington.....							
J. G. Cortelyou.....	Somerset.....							
M. Smoek.....	Monmouth.....							Grass seed.....
Archibald Oplyke.....	Mercer.....	Sealed Chief.....						
Wm. Gulleck.....	Mercer.....	Red Chief.....						
Edward Jewell.....	Mercer.....	Mediterran.....						
John Black.....	Burlington.....	Blue Stem.....						
John D. Rue.....	Mercer.....	Mediterran.....						Orchard Grass.....
Samuel Maderia.....	Gloucester.....	Silver Straw.....						
J. Arkison.....	Camden.....	Rice Pop.....						
Samuel Dobbs.....	Gloucester.....	Pop.....						
Dr. J. C. Thompson.....	Monmouth.....	Yellow.....						
Stephen Thompson.....	Monmouth.....	White.....						
J. P. Cortelyou.....	Somerset.....	White.....						
John S. Collins.....	Burlington.....	White.....						
John Black.....	Burlington.....	Gourd Seed.....						
J. L. Gibbens & Son.....	Burlington.....	Red.....						
Samuel Hazeltine.....	Burlington.....	Yellow Field.....						
Thomas A. Beams.....	Burlington.....	Yerkes.....						
William C. Brown.....	Monmouth.....	White.....						
William D. Jewell.....	Mercer.....	Woodruff.....						
Thomas Hibber.....	Sussex.....	Woodruff.....						Barley.....
A. L. Holcomb.....	Mercer.....	Woodruff.....						
Dr. J. C. Thompson.....	Monmouth.....	Sweet Corn.....						
E. L. Moore.....	Gloucester.....	Evergreen.....						

{Fultz 8—45½
bu. per acre,
62½ lbs. per
bus., 10 acres
in field.}

NAME.	County.	Corn.	Wheat.	Rye.	Oats.	Buckwheat.	Barley.	Potatoes.	Grass Seed.	Flour and Meal.
E. Burrough.....	Camden.....	{ Yellow, 70 bbs. per acre on 7 acres. Red Cob Dent. Yellow gourd seed.								
Austin Smith.....	Hunterdon.....									
Wm. D. Jewell.....	Mercer.....				White.....					
Henry E. Hall.....	Mercer.....									
Reuben Woodman.....	Salem.....									
John DeMott.....	Somerset.....									
Wm. D. Jewell.....	Mercer.....			White.....						
Paul Ails.....	Gloucester.....					Silver Hull.....				
J. B. Norton.....	Mercer.....	{ Red cob Dent. Yellow gourd seed.								
Samuel R. Sharp.....	Burlington.....									
Asa Engle.....	Gloucester.....	Canada.....								
N. Titus Stout.....	Mercer.....		Jennings bearded white.							
Jacob Hendrickson.....	Mercer.....		Clawson.....							
Job Cannon.....	Burlington.....		Tapabanoek.....							
Chas. W. Ellis.....	Monmouth.....			White.....						
D. H. Van Prafer.....	Monmouth.....									
E. Burrough.....	Camden.....		{ Fulz's 43 lbs. per bushel. Swamp Amber.							
James Allison.....	Mercer.....									
Samuel Moore.....	Gloucester.....									
Wm. Gulick.....	Mercer.....				Surprise Surprise					
J. S. Cong.....	Somerset.....									
J. L. Gibbs.....	Burlington.....			White.....						
James Murray.....	Mercer.....		{ Swamp 37 bushels per acre.							
Joseph E. Roberts.....	Burlington.....									
Dennis Cong.....	Essex.....	White field.....								
Frederick Shaugle.....	Mercer.....		Silver Straw.....							
C. E. Sutterson.....	Monmouth.....					Silver Hull.....				
E. Burrough.....	Camden.....	Yellow field.....								
Abraham Ross.....	Sussex.....		Clawson.....							
J. B. Van Doren.....	Mercer.....		Mediterranean.....							

LIST OF WOODS
GROWING WILD IN NEW JERSEY,

EXHIBITED BY THE STATE COMMISSION.

Location: Agricultural Hall, E, 17 and 18.

- White Pine, *Pinus strobus*, gneissic (rocky) soil, lands of J. P. Pennington, West Milford, Passaic county.
—— Sandy soil of marl region, Ellwood Snyder's lands, near Colt's Neck, Monmouth county.
- Yellow Pine, *Pinus mitis*, swampy black earth, lands of J. P. Pennington, West Milford, Passaic county.
—— Sandy soil, marl region, lands of T. F. Taylor, near Colt's Neck, Monmouth county.
- Pitch Pine, *Pinus rigida*, from ledge of quartzose conglomerate, lands of Mrs. C. L. Rutherford, Rough mountain, west of Greenwood lake, Passaic county.
—— Sandy soil, lands of T. F. Taylor, near Colt's Neck, Monmouth county.
- Spruce Pine, *Pinus inops*, sandy soil, lands of Ellwood Snyder, near Colt's Neck, Monmouth county.
- Hemlock, *Abies Canadensis*, gneissic soil, lands of J. P. Pennington, West Milford, Passaic county.
- Black Spruce, *Abies nigra*, swamp on lands of Mrs. C. L. Rutherford, West Milford township, Passaic county.
—— Sandy soil, marl region, Ellwood Snyder's lands, near Colt's Neck, Monmouth county.
- Tamarack, *Larix Americana*, very wet swamp, lands of Mrs. C. L. Rutherford, West Milford township, Passaic county.

White Cedar, *Cupressus thyoides*, sandy soil, marl region, T. F. Taylor, near Colt's Neck, Monmouth county.

——— This specimen is from the salt marsh near Dennisville, Cape May county, it was found 11 feet beneath the surface, and has doubtless been buried there many centuries. The wood is still sound, and the rest of this log was split into shingles. It evidently lay upon the ground where it originally grew. It was secured for this collection by Dr. Maurice Beesley, of Dennisville.

Red Cedar, *Juniperus Virginiana*, New Brunswick, Middlesex county.

——— Lands of Samuel W. Jones, Atlantic township, Monmouth county.

——— Old beach, Atlantic City, Atlantic county.

White Oak, *Quercus alba*, rocky upland, border of Canistear pond, lands of Adam Smith, Vernon township, Sussex county.

——— N. N. Crane & Co., Caldwell, Essex county.

——— marl subsoil, farm of Samuel W. Jones, Atlantic township, Monmouth county.

Post Oak, *Quercus obtusiloba*, from E. H. Wright, Stockholm, Passaic county.

——— sandy loam, H. A. Green's farm, Atco, Camden county.

Swamp White Oak, *Quercus bicolor*, bog meadow, lands of Mrs. C. L. Rutherford, West Milford township, Passaic county.

——— N. N. Crane & Co., Caldwell, Essex county.

Yellow Oak, *Quercus* ——, rough swale, lands of Freeman Furgerson, Vernon township, Sussex county.

Chestnut Oak, *Quercus Prinus*, from ledge of rocks, lands of J. P. Pennington, West Milford township, Passaic county.

——— (Spanish Oak), *Quercus Prinus*, sandy soil, lands of Daniel S. Conover, Atlantic township, Monmouth county.

Rock Chestnut Oak, *Quercus monticolor var.*, clay loam, lands of Ezra H. Day, Hardiston township, Sussex county.

——— sandy soil, Richards estate, Jackson, Camden county.

Quercitron Oak, *Quercus tinctoria*, sandy soil, H. A. Green's lands, Ateo, Camden county.

Black Oak, *Quercus nigra*, upland, John Crane's farm, West Milford township, Passaic county.

—— side of a ravine, on green sand marl bottom, Samuel W. Jones' farm, Atlantic township, Monmouth county.

Red Oak, *Quercus rubra*, side of ravine, marl bottom, Samuel W. Jones' farm, Atlantic township, Monmouth county.

Pin Oak, *Quercus palustris*, on edge of charcoal pit bottom, A. L. Day's lands, West Milford township, Passaic county.

—— lands of J. H. & M. M. Cook, Hanover, Morris county.

—— side of ravine, marl bottom, S. W. Jones' farm, Atlantic township, Monmouth county.

Willow Oak, *Quercus Phellos*, marsh, lands of R. O. Bryant, Canistear, Hardyston township, Sussex county.

—— sandy soil, Kearney tract, E. F. Roberts, South Amboy township, Middlesex county.

Chestnut, *Castanea vesca*, clay loam soil, stony, lands of Wm. Kimble, west side of Dunker Pond, West Milford township, Passaic county.

—— marl subsoil, side of a ravine, Samuel W. Jones' farm, Atlantic township, Monmouth county.

Black Walnut, *Juglans nigra*, meadow, marl bottom, Samuel W. Jones' farm, Atlantic township, Monmouth county.

Butternut, *Juglans cinerea*, stony and wet ground, lands of Freeman Furgerson, Vernon township, Sussex county.

White Elm, *Ulmus Americana*, black swampy land, Dunker Pond Hollow, Wm. Kimble's farm, West Milford township, Passaic county.

—— ravine slope, marl subsoil, Samuel W. Jones' farm, Atlantic township, Monmouth county.

Red Elm, *Ulmus fulva*, black, swampy ground, Dunker Pond Hollow, lands of E. H. Wright, West Milford township, Passaic county.

- Slippery Elm, *Ulmus fulva*, var., stony ground, blue clay subsoil, lands of Wm. Kimble, West Milford township, Passaic county.
- marl subsoil, Samuel W. Jones' farm, Atlantic township, Monmouth county.
- Nettle Tree, *Celtis occidentalis*, red shale, lands of George W. Metlar, Raritan Landing, near New Brunswick, Middlesex county.
- White Ash, *Fraxinus Americana*, black earth, mountain swamp, lands of D. F. Margerum, Hardyston township, Sussex county.
- marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- Black Ash, *Fraxinus sambucifolia*, black, swampy ground, Dunker Pond Hollow, lands of E. H. Wright, West Milford township, Passaic county.
- marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- Black Birch, *Betula lenta*, rocky ground, J. P. Pennington's lands, West Milford township, Passaic county.
- marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- White Birch, *Betula alba*, swamp, Richards' estate, Atco, Camden county.
- from N. N. Crane & Co., Passaic River valley, Caldwell, Essex county.
- River Birch, *Betula nigra*, Passaic River bank, J. H. & M. M. Cook's lands, Hanover, Morris county.
- Yellow Birch, *Betula lutea*, marsh lands of D. F. Margerum, Hardyston township, Sussex county.
- Beech, *Fagus ferruginea*, from N. N. Crane & Co., Passaic River Valley, Caldwell, Essex county.
- Marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.

- Tulip Tree**, *Liriodendron Tulipifera*, marshy ground east side of Dunker Pond Hollow; lands of E. H. Wright, West Milford township, Passaic county.
- marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- Poplar**, *Populus grandidentata*, charcoal pit bottom, swampy land, Dunker Pond Hollow, lands of A. L. Day, West Milford township, Passaic county.
- marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- Sweet Gum**, *Liquidambar Styraciflua*, from N. N. Crane & Co., Passaic River Valley, Caldwell, Essex county.
- (White Gum), *Liquidambar Styraciflua*, N. N. Crane & Co., Passaic River Valley, Caldwell, Essex county.
- Sour Gum**, *Nyssa multiflora*, swamp, lands of J. P. Pennington, West Milford township, Passaic county.
- marl soil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- Basswood**, *Tilia Americana*, gneissic soil, land of Wm. Kimble, northeast of Dunker Pond, West Milford township, Passaic county.
- Buttonwood**, *Platanus occidentalis*, marl bottom, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- Shag-bark Hickory**, *Carya alba*, border of swamp, lands of Mrs. C. L. Rutherford, West Milford township, Passaic county.
- Pig-nut Hickory**, *Carya porcina*, sandy soil, Benjamin C. McGee's lands, Hardyston township, Sussex county.
- marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- Bitternut Hickory**, *Carya amara*, stony, clay soil, lands of Wm. Kimble, west side of Dunker Pond, West Milford township, Passaic county.
- Hardshell Hickory**, *Carya tomentosa*, swamp border, lands of E. H. Wright, north end of Dunker Pond Hollow, West Milford township, Passaic county.

- Hardshell Hickory, *Carya tomentosa*, marl subsoil, side of a ravine, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- Wild Cherry, *Prunus serotina*, border of swamp, lands of Adam Smith, near Canistear Pond, Vernon township, Sussex county.
- marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- Sugar Maple, *Acer saccharinum*, marsh, on lands of E. H. Wright, east of Dunker Pond Hollow, West Milford township, Passaic county.
- marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- Red Maple, *Acer rubrum*, lands of Wm. Kimble, West Milford township, Passaic county.
- marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- White Maple, *Acer dasycarpum*, marsh, on lands of D. F. Margerum, Hardyston township, Sussex county.
- Ash-leaved Maple, *Negundo aceroides*, from E. H. Wright, Stockholm, Passaic county.
- Dogwood, *Cornus florida*, lands of Mrs. C. L. Rutherford, West Milford township, Passaic county.
- soil, sandy loam, lands of Peter G. Conover, Marlborough, Monmouth county.
- Holly, *Ilex opaca*, marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- from Hon. Wm. I. James, Toms River, Ocean county.
- American Hornbeam, Blue or Water Beech, *Carpinus Americana*, from N. N. Crane & Co., Passaic River Valley, Caldwell, Essex county.
- Hop Hornbeam, Ironwood, *Ostrya Virginica*, from E. H. Wright, Stockholm, Passaic county, (200 years old).
- from N. N. Crane & Co., Passaic River Valley, Caldwell, Essex county.

-
- Hop Hornbeam, Ironwood, *Ostrya Virginica*, marl subsoil, lands of Samuel W. Jones, Atlantic township, Monmouth county.
- Box, *Buxus sempervirens*, Garret S. Luyster's farm, Middletown, Monmouth county, 160 years old.
- Persimmon, *Dyospyros Virginiana*, sandy loam, Lafayette Conover, Marlborough, Monmouth county.
- sandy soil, E. F. Roberts, South Amboy township, Middlesex county.
- Mulberry, *Morus rubra*, from N. N. Crane & Co., Caldwell, Essex county.
- White Mulberry, *Morus alba*, N. N. Crane & Co., Caldwell, Essex county.
- Apple, *Pyrus malus*, Samuel W. Jones' farm, Atlantic township, Monmouth county.
- Pear, *Pyrus communis*, S. W. Jones' farm, Atlantic township, Monmouth county.
- Mountain Ash, *Pyrus Americana*, rocky ground, B. C. McGee's land, Hardyston township, Sussex county.
- Ailanthus, *Ailanthus glandulosus*, red shale soil, lands of Geo. W. Metlar, Raritan Landing, near New Brunswick, Middlesex county.
- Locust, *Robinia Pseudacacia*, marl subsoil, lands of I. G. Smock, Atlantic township, Monmouth county.
- Honey Locust, *Gleditschia triacanthos*, red shale soil, George W. Metlar's farm, Raritan Landing, near New Brunswick, Middlesex county.
- Sassafras, *Sassafras officinale*, marl subsoil, I. G. Smock's farm, Atlantic township, Monmouth county.
- Magnolia, *Magnolia glauca*, swamp, Ocean county, from Hon. Wm. I. James. This was the largest magnolia tree in the county.
- swamp, Richards' estate, Atco, Camden county.
- Weeping Willow, *Salix Babylonica*, S. W. Jones' farm, Atlantic township, Monmouth county.

- White Willow, *Salix alba*, wet meadow, marl bottom, S. W. Jones' farm, Atlantic township, Monmouth county.
- Water Willow, *Salix viminalis*, wet meadow, marl bottom, S. W. Jones' farm, Atlantic township, Monmouth county.
- Swamp Huckleberry, *Vaccinium corymbosum*, swamp, Richards' estate, Atco, Camden county.
- Black Alder, *Ilex verticillata*, swamp, H. A. Green's lands, Atco, Camden county.
- Tag Alder, *Alnus serrulata*, swamp, H. A. Green's lands, Atco, Camden county.
- Button-bush, *Cephalanthus occidentalis*, swamp, Kirkwood, Camden county, from H. A. Green.
- Shad-bush, *Amelanchier Canadensis*, upland side-hill, Kirkwood, Camden county, from H. A. Green.

This first effort to collect the native woods of New Jersey has been heartily seconded by all those who have had opportunity to contribute. The specimens have all been given by the owners of the lands where they grew, as mentioned in the list. Thanks are due to all these persons and also to the following named who gave much time and labor in preparing and sending them forward.

E. H. Wright, of Stockholm, Passaic county, collected forty species and varieties—all those coming from Sussex and Passaic counties. Nearly all of them were got in Vernon township, Sussex county, and West Milford township in Passaic county.

N. N. Crane & Co., of Caldwell, Essex county, collected ten species. These are from the valley of the Passaic river near Caldwell.

Geo. W. Metlar, of New Brunswick, gave three species.

E. F. Roberts, of South Amboy, gave two specimens.

Samuel W. Jones, Atlantic township, Monmouth county, collected twenty-eight species, most of them from his own farm.

I. G. Smock, Atlantic township, Monmouth county, gave locust and sassafras, and collected nine species.

Garret S. Luyster, of Middletown, Monmouth county, gave the box tree.

Hon. Wm. I. James, of Toms River, Ocean county, furnished the holly and magnolia.

H. A. Green, of Atco, Camden county, contributed eleven species.

J. H. & M. M. Cook, of Hanover, gave a pin oak and a river birch.

GREENSAND MARLS.

Clay Marls.

1. Clay Marl, E. Hardy, Jacksonville, Middlesex county.
3. ——— John E. Hopkins' pits, Haddonfield, Camden county.
4. ——— Samuel Sharp's pits, near Woodbury, Gloucester county.

Marls from the Lower Marl Bed.

5. Blue Marl, Azariah Conover's pits, Middletown, Monmouth county.
6. Red Marl, E. A. Osborn's pits, Middletown, Monmouth county.
- 6A. Grey Marl, E. A. Osborn's pits, Middletown, Monmouth county.
7. Red or High Bank Marl, I. G. Smock's pits, Holmdel, Monmouth county.
- 7A. Blue Marl, I. G. Smock's pits, Holmdel, Monmouth county.
- 7B. Sand Marl, I. G. Smock's pits, Holmdel, Monmouth county.
8. Blue, Shell, Marl, Rev. G. C. Schanck's pits, Marlborough, Monmouth county.
- 8A. Sand Marl, Rev. G. C. Schanck's pits, Marlborough, Monmouth county.
9. Blue Marl (above shell layer), O. C. Herbert's pits, Marlborough, Monmouth county.

- 9A. Shell Layer, O. C. Herbert's pits, Marlborough, Monmouth county.
- 9B. Marl (under shell layer), O. C. Herbert's pits, Marlborough, Monmouth county.
- 9C. ——— (Next above Sand Marl), O. C. Herbert's pits, Marlborough, Monmouth county.
10. Blue Marl, (two specimens), Dr. J. C. Thompson's pits, Monmouth Battle Ground, near Freehold, Monmouth county.
11. Blue Marl (top), John R. Perrine, Manalapan, Monmouth county.
- 11A. ——— (bottom), John R. Perrine, Manalapan, Monmouth county.
12. Marl, William H. Mason's pits, Haddonfield, Camden county.
13. Marl, Batten's pits near Swedesboro, Gloucester county.
- 13A. Grey Marl, Batten's pits, near Swedesboro, Gloucester county.
14. Red Marl, (top). Nathan Lippincott's pits, Auburn, Salem county.
- 14A. Shell Marl, Nathan Lippincott's pits, Auburn, Salem county.
- 14B. Green Marl, (sandy). Nathan Lippincott's pits, Auburn, Salem county.
- 14C. Blue Marl, (sandy). Nathan Lippincott's pits, Auburn, Salem county.
- 14D. Clayey Marl, Nathan Lippincott's pits, Auburn, Salem county.
15. Shell Marl, Bassett's pits, Mannington township, Salem county.

Middle Marl Bed.

16. Limesand, Turtle Mill, near Long Branch, Monmouth county.

17. Shell Marl, Eatontown, Monmouth county.
18. Green Marl, Colt's Neck, Monmouth county.
19. Green Marl, Charles A. Bennett's pits, Blue Ball, Monmouth county.
20. Green Marl, Cream Ridge Marl Company, near Hornerstown, Monmouth county.
21. Green Marl, Pemberton Marl Company, Pemberton, Burlington county.
- 21A. Chocolate Marl, Pemberton Marl Company, Pemberton, Burlington county.
22. Limesand, H. J. Irick's pits, Vincentown, Burlington county.
23. Green Marl, Fostertown and South Branch Marl and Transportation Company, Burlington county.
24. ———, Chas. Hollingshead's pits, Medford, Burlington county.
25. Limesand, Haines' Mills, near Medford, Burlington county,
26. Green Marl, Ballanger's pits, near Lumberton, Burlington county.
27. White Marl (Limesand), B. Tomlinson's pits, two miles from Clementon, Camden county.
28. Green Marl, Minor Rogers' pits, Kirkwood, Camden county.
29. "Gray Marl" (Limesand) David E. Marshall's pits, Blackwoodtown, Camden county.
- 29A. Limestone, David E. Marshall's pits, Blackwoodtown, Camden county.
- 29B. Red Marl, David E. Marshall's pits, Blackwoodtown, Camden county.
- 29C. "Yellow Marl," (top of shell layer), David E. Marshall's pits, Blackwoodtown, Camden county.
- 29D. Blue Marl, David E. Marshall's pits, Blackwoodtown, Camden county.

- 29E. Black Marl, David E. Marshall's pits, Blackwoodtown, Camden county.
30. Shell Marl, E. Brewer's pits, Blackwoodtown, Camden county.
31. Green Marl, Thos. J. Heritage's pits, Hurfville, Gloucester county.
- 31A. Shell Marl, Thos. J. Heritage's pits, Hurfville, Gloucester county.
- 31B. Limestone, Thos. J. Heritage's pits, Hurfville, Gloucester county.
32. Shell Marl, West Jersey Marl Company, Barnsborough, Gloucester county.
- 32A. Green Marl, West Jersey Marl Company, Barnsborough, Gloucester county.
- 32B. Chocolate Marl, West Jersey Marl Company, Barnsborough, Gloucester county.
33. Shell Marl, N. T. Stratton's pits, Mullica Hill, Gloucester county.
- 33A. Blue Marl, N. T. Stratton's pits, Mullica Hill, Gloucester county.
- 33B. Green Marl, N. T. Stratton's pits, Mullica Hill, Gloucester county.
- 33C. Chocolate Marl, N. T. Stratton's pits, Mullica Hill, Gloucester county.
34. Chocolate Marl, John W. Hazleton's pits, Harrison township, Gloucester county.
35. Limestone and Lime Sand, William H. Reed's pits, Pilesgrove township, Salem county.
36. Green Marl, pits of I. V. Dickinson & Bro., Woodstown, Salem county.
37. Limestone, Barber's quarry, Mannington township, Salem county.
38. Red Marl, Pettit's pits, Mannington township, Salem county.

-
39. Shell Marl, Pettit's pits, Mannington township, Salem county.
40. Fuller's Earth, Oliphant's Mills, near Medford, Burlington county. (This lies under the green marl layer of the upper bed.)

Upper Marl Bed.

41. Ash Marl, Squankum Marl Company, Farmingdale, Monmouth county.
- 41A. Green Marl, Squankum Marl Company, Farmingdale, Monmouth county.
42. ——— Squankum and Freehold Marl Company, Farmingdale, Monmouth county.
43. Green Marl, New Egypt, Ocean county.
44. Ash Marl, Mrs. Bussom's pits, New Egypt, Ocean county.
- 44A. Green Marl, Mrs. Bussom's pits, New Egypt, Ocean county.
45. ——— T. Wiles' estate, New Egypt, Ocean county.
46. Green Marl, Vincentown Marl Company, Vincentown, Burlington county.
47. Yellow Marl (top), Oliphant's Mills, near Medford, Burlington county.
48. Green Marl, Vincentown, Burlington county.
49. ——— Hamilton Adams' pits, near Clementon, Camden county.
50. ——— George Lippincott's pits, near Clementon, Camden county.

. Tertiary (Miocene) Marls.

51. Marl, J. D. Kier's pits, Harrison township, Gloucester county.
52. Yellow Marl, George Ayar's pits, near Jericho, Cumberland county.

-
- 52A. Green Marl, George Ayar's pits, near Jericho, Cumberland county.
 - 52B. Shell Marl, George Ayar's pits, near Jericho, Cumberland County.
 - 53. Marl, Constant Somers' pits, near Bakersville, Atlantic county.

Natural Fertilizers.

- 54. Shells, from Indian shell heaps on Flax Island, near Tuckerton, Burlington county.
- 55. Fossil Shells, Fossil oyster bed along Maurice River, near Port Elizabeth, Cumberland county.
- 56. Cancerine, Made from the king crab, (*Limulus polyphemus.*) Cape May county factory, West Creek, Cape May.
- 57. Eel Grass, (A species of sea weed used as a fertilizer). Tuckerton, Burlington county.
- 58. Fish Guano, Tuckerton, Burlington county.
- 60. Muck, From wet meadow on farm of John R. Perrine, Manalapan, Monmouth county.
- 61. ———, From savanna land, W. Regsi's land, Atco, Camden county.
- 62. ———, From swamp, H. A. Green's land, Atco, Camden county.
- 63. ———, From swamp, (coniferous trees), near Jackson, Camden county.

Lime.

- 64. Lime, Made from crystalline limestone, White Rock Lime and Cement Company, McAfee Valley, Sussex county.
- 65. ———, Walkill Cement and Lime Company, Hamburgh, Sussex county.

-
66. Lime, Sandford Nearpass' kilns, near Carpenter's Point, Montague township, Sussex county. (Made from Lower Helderberg limestone).
 67. ———, Chas W. Cope's kilns, Carpenterville, Warren county. (Made from magnesian limestone).
 68. ———, Barber's kilns, Mannington township, Salem county. (Made from the yellow limestone of the middle marl bed).
 69. ———, Outcalt & De Hart, New Brunswick, Middlesex county. (Made from oyster shells).

SOILS AND SUBSOILS

EXHIBITED BY THE NEW JERSEY STATE COMMISSION.

Gneissic.

70. Soil, Hon. Aaron Robertson's lands, Schooley's Mountain, Morris county. A natural soil, which has not been changed by manuring or tillage.
- 70A. Subsoil, Under above soil.
71. Soil, Martin J. Ryerson's farm, Bloomingdale, Passaic county. A natural soil.
- 71A. Subsoil, Under above soil.
72. Soil of Gneissic Drift, Martin J. Ryerson's farm, Pompton Plains, Morris county.
- 72A. Subsoil, Under 72.

Magnesian Limestone.

73. Soil, Thomas Shields' farm, Beattiestown, Warren county.
- 73A. Subsoil, Under 73.

Slate Soil.

74. Soil, Delaware Station, Warren county. A natural soil from a woodland border.
- 74A. Subsoil, Under 74.
75. Soil, Newton, Sussex county, from Wm. P. Nicholas.
- 75A. Subsoil, Under 75.

Triassic.

76. Red Shale Soil, Unfenced commons in New Brunswick, Middlesex county. It has not been tilled in many years.
- 76A. Subsoil, Under the above shale soil.
77. Shale Soil, Modified by clay drift, State Agricultural College Farm, New Brunswick. Uncultivated.
- 77A. Subsoil, From State Agricultural College Farm, New Brunswick. Uncultivated.

Green-Sand Marl Region.

78. Red Sandy Soil, From the Red Sand Bed on E. A. Osborn's farm, Middletown, Monmouth county.
- 78A. Subsoil, From the Red Sand Bed on E. A. Osborn's farm, Middletown, Monmouth county.
79. Soil, Azariah Conover's farm, Middletown, Monmouth county. This soil has never been ploughed.
- 79A. Subsoil, Under 79.
- 79B. Second Subsoil, (16-24 in. deep). Under 79.
80. Soil, Rev. G. C. Schanck's farm, near Marlborough, Monmouth county. A natural soil.
- 80A. Subsoil, Under 80.
- 80B. Second Subsoil, Under 80.
86. Soil, John R. Perrine's farm, Manalapan, Monmouth county. This soil has been in a high state of cultivation for many years.
- 86A. Subsoil, Under 86.
- 86B. Second Subsoil, Under 86.
87. A Meadow Soil, John R. Perrine's farm.
- 87A. Subsoil, Under above.
- 87B. Second Subsoil, Under above.
88. Soil, H. J. Irick's lands, Vincentown, Burlington county. Taken from the roadside.

- 88A and 88B. **Subsoils**, Under the above.
89. **Soil**, Lesley Peacock's lands, Medford, Burlington county. From woodland.
- 89A and 89B. **Subsoils**, Under 89.
90. **Soil**, Charles Hollingshead's farm, Medford, Burlington county. From a corner of a field.
- 90A and 90B. **Subsoils**, Under the above soil.
91. **Soil**, Ira Branin's farm, Medford, from roadside.
- 91A and 91B. **Subsoil**, Under the above.
92. **Soil**, Benjamin Tomlinson's farm, near Clementon, Camden county. From roadside, and has not been cultivated for years.
- 92A and 92B. **Subsoils**, From under 92.
93. **Soil**, Near C. & A. R. R. Station, Haddonfield, Camden county.
- 93A and 93B. **Subsoils**, From Haddonfield, Camden county, under 93.
94. **Soil**, Charles Stevenson's farm, Blackwoodtown, Camden county. Taken from a fence corner of a cultivated field.
- 94A and 94B. **Subsoils**, From under 94.
95. **Soils**, Benjamin C. Tatum's farm, Woodbury, Gloucester county. This soil was broken up once, but it has not been manured.
- 95A and 95B. **Subsoils**, Under 95.
96. **Soil**, Nathan Lippincott's Woodland, Auburn, Salem county.
- 96A and 96B. **Subsoils**, Under 96.

Tertiary Formation.

97. **Soil**, Spring Lake Beach (old Osborn farm), Squan, Monmouth county.
- 97A and 97B. **Subsoils**, Under 97.

98. **A Subsoil**, (clay), W. F. F. Murray, Atco, Camden county.
99. Underlying 98.
100. **Soil**, H. A Green's land, Atco, Camden county. This is one of the poorest on the Atco tract.
- 100_A and 100_B. **Subsoils**, Under 100.
101. **Soil**, Richards estate, Jackson, Camden county. Taken from old fields.
- 101_A and 101_B. **Subsoils**, Under 101.
102. **Soil**, Henry Jackson's woodland, east of Mullica Hill, Gloucester county.
- 102_A and 102_B. **Subsoils**, Under 102.
103. **Soil**, From white oak bottom, Upper Alloway's Creek, Salem county.
- 103_A and 103_B. **Subsoils**, Under above.
104. **Soil**, Low oak lands, Upper Alloway's Creek, Salem county.
- 104_A and 104_B. **Subsoils**, From under 104.
105. **Soil**, George Ayar's farm, near Jericho, Cumberland county. From brush land.
- 105_A and 105_B. **Subsoils**, From under 105.

Drift.

106. **Soil**, George W. Cowperthwait's land, Tom's River, Ocean county.
- 106_A and 106_B. **Subsoils**, From under 106.
107. **Soils**, Whiting's Station, Ocean county. Gravelly, heavy loam.
- 107_A and 107_B. **Are Subsoils**, Under 107.
108. **Soil**, Whiting's Station, Ocean county. Loam with clay.
- 108_A and 108_B. **Subsoils**, From under 108.
109. **Soil**, Whiting's Station, Ocean county.
- 109_A and 109_B. **Subsoil**, Under above.

-
110. Soil, Dr. Theo. T. Price's woodland, Tuckerton, Burlington county.
- 110_A and 110_B. Subsoils, From under 110.
111. Soil, Atsion, Burlington county. Uncultivated.
- 111_A and 111_B. Subsoils, From under 111.
112. Soil, Lands of Thos. Richards, Jr., Atco, Camden county.
- 112_A and 112_B. Subsoils, Under above.
113. Soil, Woodland of Hon. A. K. Hay, Winslow, Camden county.
- 113_A and 113_B. Subsoils, Under 113.
114. Soil, Twelfth street and First road, Hammonton, Atlantic county. Said to represent a large part of this tract.
- 114_A and 114_B. Subsoils, From under 114.
115. Hammonton, Atlantic county. A poor soil.
- 115_A and 115_B. Subsoils, From under 115.
116. Soils, Near the C. & A. R. R. station, Hammonton, Atlantic county. A light soil representing a little of this tract.
- 116_A and 116_B. Subsoils, Under the above.
117. Soil, N. Varnum's farm, Atco, Camden county.
- 117_A and 117_B. Subsoils, Under 117.
118. Soil, M. Van's farm, Atco.
- 118_A and 118_B. Subsoils, Under 118.
119. Soil, H. Bahihe, Egg Harbor City, Atlantic county.
This is reported as a superior grape soil.
- 119_A and 119_B. Subsoils, Under 119.
120. Soil, H. Höbel's lands, Egg Harbor City. A poorer soil.
- 120_A and 120_B. Subsoils, From under 120.
121. Soil, Mrs. Meigs' farm, Elmer Road, Vireland, Cumberland county.
- 121_A and 121_B. Subsoils, Under 121.
122. Soil, West avenue and Grape road, Vineland.

- 122A and 122B. **Subsils**, West avenue and Grape road, Vineland.
123. **Soil**, Geo. Cooper's farm, one mile west of Millville, Cumberland county. From woodland.
- 123A and 123B. **Subsoils**, Under 123.

Post-Tertiary Formation.

124. **Soil**, Port Elizabeth, Cumberland county. From roadside.
- 124A and 124B. **Subsoils**, Under 124.
125. **Soil**, Seaville Station, Cape May county. Uncultivated.
- 125A and 125B. **Subsoils**, Under 125.
126. **Soil**, Capt. Van Gilder's lands, one mile from Seaville Station, Cape May county. Uncultivated.
- 126A and 126B. **Subsoils**, From under 126.
127. **Beach Sand**, Cape May.
128. ———, New beach, Atlantic City, Atlantic county.
129. ———, Old beach, Atlantic City, Atlantic county.
130. **Marsh Mud**. From banked meadows in Mannington township, Salem county.
131. ———, Atlantic City.

CATALOGUE OF THE EXHIBIT
OF THE
GEOLOGICAL SURVEY OF NEW JERSEY.

Location : Main Building, T, 70.

Prof. Geo. H. Cook, State Geologist, New Brunswick.

New Jersey is one of the original thirteen States of the Union. It lies almost central on the eastern border of the United States. Being easy of access from the ocean, enjoying a mild climate, and having a fertile soil, its natural advantages were appreciated and improved at an early day. Farming was the first business of its people, but the manufacture of iron was begun as early as 1682; mining on an extensive scale was carried on for many years before the revolution, and a direct trade with the West Indies and with Europe was established at several places.

The area of the State is 7,576 square miles, and its population in 1870 was 906,096. It is the thirty-third State in size, and the seventeenth in population, while in wealth it is the eighth; in value of manufactured products it is the seventh; in value of mining products the eleventh; and in the products of agriculture the twentieth.

The development of its natural resources has long received the attention of its authorities. A geological survey of the State was made by the late Prof. Henry D. Rogers, in 1836-7. A more elaborate survey was begun by the late Dr. Wm. Kitchell, in 1854, and was continued through the years 1855-6, when it was suspended; but was resumed under its present organization in 1864, and has been con-

tinued in operation from that time onward. The economical applications of a scientific survey have been kept prominently in view in the whole course of the work, and the results have justified the wisdom of this course.

The value of farm lands has increased from year to year, and the price per acre is greater than in any other State in the Union. The amount of farm and garden products is adequate to the supply of the whole population.

The yield of the iron mines has had a steady increase for many years past, and in 1873 no less than 665,652 tons of iron ore were mined. The depression in the business of the country has lessened the demand for ore, but about 400,000 tons have been mined the past year. The rich mines of zinc continue to yield an abundant supply of ore of the finest quality. 17,500 tons were mined in 1873, and not far from 10,000 tons in 1875.

The clay for fire-bricks, pottery and other uses, is worked to the great advantage of our manufacturers, and the demand for it is very large. The aggregate annual value of this product, in its raw state, is estimated at \$1,000,000, and the manufactured articles from it at an equal sum additional. The green sand marl dug for use on the farm lands amounts annually to from 150,000 to 200,000 tons, and the lime burned for agricultural use cannot be ascertained accurately, but it is several hundred thousand bushels.

The construction of railways, roads and canals, so as to supply cheap and expeditious communication between the great markets of the country and the districts of agricultural, manufacturing and mining production, has fully kept pace with the other developments of industrial progress. There are in the State over 1,200 miles of railway, a considerable portion of which is double track, and some of it has three and even four lines of tracks. This gives at least a mile of railway for every five square miles of territory, brings a line of railway within a distance of five or six miles

of almost every dwelling, and makes it possible for most of the people to visit New York or Philadelphia, transact business there and return to their homes on the same day.

The increase in the wealth of the State is seen in the valuation of its real estate and personal property, which was, in 1850, \$200,000,000; 1860, \$467,000,000; 1870, \$940,976,064.

The geological structure and formation of a country furnishes the key to its stores of mineral and agricultural wealth, directs the course which its roads and railroads must take, shows its lines of natural drainage, its sources of water supply and water power, and provides the locations best adapted for the healthful residences of man.

To ascertain, describe and make known the Geology of New Jersey, as thus defined, is the object of this Centennial Exhibit of rocks, ores, minerals and other natural products, and of the accompanying geodetic, topographic, geological, mine and drainage maps.

All the larger geological formations of the United States, except the coal formation, are found in this State. They occur in parallel belts, or zones, usually some miles in breadth, which traverse the State in a northeast and southwest direction; and they are so regular in this respect that a person may travel on a northeast and southwest road from one side of the State to the other and see but a single geological formation. But, on the contrary, if he should journey from Barnegat, on the Atlantic coast, northwest to Port Jervis, on the Delaware, he would cross every formation in the State.

The collection of rocks shown has representative specimens from Azoic, Silurian, Devonian, Triassic, Cretaceous, Tertiary, Drift and Recent formations. A short description of each of these is inserted at the head of its proper division in the catalogue.

Azoic Formations.

[THOSE MARKED THUS * ARE NOT ON EXHIBITION, OWING TO THE WANT OF SPACE.]

The Azoic Formations are the Archaic of Dana, and the Laurentian of Canada; they are the oldest of the geological series, and are made up of granitic, gneissic, and other crystalline rocks, and contain no fossils. They are the material composing the mountain ranges which extend across the northwestern part of the State, and are known by the names of Ramapo, Warwick, Hamburgh, Pochuck, Schooleys, Mine, Musconeteong, Scotts and other mountains. They extend to and beyond the North River in New York, where they are known as the Highlands, and in Pennsylvania their extension is known as the South Mountain. They cover an area of about 772 square miles in New Jersey, and they contain all the mines of magnetic iron ore.

Gneiss, Granite, Syenite, Mica Schist, &c.

1. Gneiss, Central R. R. cut, one mile west of Lebanon, Hunterdon county.
2. ——— Central R. R. cut, one-half mile southeast of High Bridge, Hunterdon county.
3. ——— Graphitic, Central R. R. cut, one-half mile southeast of High Bridge, Hunterdon county.
4. Granite, High Bridge and Chester R. R., one mile north of High Bridge, Hunterdon county.
5. Gneiss, with Magnetite, Whitehall, Hunterdon county.
6. Gneiss, One mile west of Mendham, on the Chester Road, Morris county.
- 6A. ——— with Graphite, near Mendham, Morris county.

-
7. Mica Schist, Hacklebarney mines, two miles southwest of Chester, Morris county.
 - *7A. Rock, Hanging wall, Hedges mine, one mile southwest of Chester, Morris county.
 - *7B. ——— Foot wall, Hedges mine, one mile southwest of Chester, Morris county.
 - *7C. ——— Pinch between shoots of ore, Hedges mine, one mile southwest of Chester, Morris county.
 - *8. ——— Foot wall, Dalrymple mine, four miles south of Dover, Morris county.
 9. Gneiss, Baker mine, Mine Hill, two miles west of Dover, Morris county.
 - *10. Rock, Foot wall, Randolph Hill mine, one and one-half miles west of Dover, Morris county.
 - *10A. ——— Hanging wall, Randolph Hill mine, one and one-half miles west of Dover, Morris county.
 - 10B. Gneiss, Feldspathic, Horse, Randolph Hill mine, one and one-half miles west of Dover, Morris county.
 11. Gneiss, D. L. & W. R. R. Co.'s quarry, Dover, Morris county.
 - *12. Rock, Hanging wall, Allen mine, upper opening, Rockaway township, Morris county.
 - *13. ——— Hanging wall, Teabo vein, Mount Hope, Morris county.
 - *13A. ——— Horse, Teabo vein, Mount Hope, Morris county.
 - *14. ——— Brannin vein, Hickory Hill, Mount Hope mines, Mount Hope, Morris county.
 - 14A. Gneiss, Teabo vein, Mount Hope, Morris county.
 15. ——— Foot wall, Glendon Iron Company's shaft, No. 1, Hibernia mines, Morris county.
 - 15A. Gneiss, Horse, Glendon Iron Company's shaft, No. 1, Hibernia mines, Morris county.
 16. ——— Foot wall, shaft No. 4, Bethlehem Iron Company, Hibernia mines, Morris county.

-
- *17. Rock, Foot wall, shaft No. 2, Bethlehem Iron Company, Hibernia mines, Morris county.
 - 17A. Gneiss, Hanging wall, shaft No. 2, Bethlehem Iron Company, Hibernia mines, Morris county.
 - 18. ——— shaft No. 7, Bethlehem Iron Company, Hibernia mines, Morris county.
 - *19. Rocks, Suite of, Beach Glen mine, Rockaway township, Morris county.
 - *20. ——— De Camp mine, Rockaway Valley, Morris county.
 - 22. Syenite, with Magnetite, Jackson mine, Pompton, Morris county.
 - 23. Gneiss, M. J. Ryerson's quarry, Bloomingdale, Passaic county.
 - 24. ——— Beam Tract, two miles north of Bloomingdale, Passaic county.
 - 25. Slate, Ledge in Pompton river, Pompton, Morris county.
 - 26. Gneiss, Near Green Pond iron mines, Copperas mountain, Morris county.
 - 27. Syenite, Joseph Brennan's quarry, on lands of M. J. Ryerson, Charlotteburg, Passaic county.
 - 28. Gneiss, Pohatcong mountain, one-half mile south of Riegelsville, Warren county.
 - *29. Rocks, Suite of, Turkey Hill mine, near Bethlehem, Hunterdon county.
 - 29A. Gneiss, Easton & Amboy R. R. cut, one mile west of Bethlehem, Hunterdon county.
 - 30. ——— Wm. S. Gardiner's farm, Pohatcong mountain, two miles north of Bloomsbury, Warren county.
 - 31. ——— Easton & Amboy R. R. cut, one mile west of Bethlehem, Warren county.
 - 32. Syenite, D. L. & W. R. R. cut, one-half mile west of Hampton Junction, Hunterdon county.
 - 32A. Granite, Hampton Junction, Hunterdon county.

-
33. Gneiss, Van Nest Gap tunnel, near Oxford Furnace, Warren county.
 34. ——— Aaron Bryan's quarry, Port Murray, Warren county.
 35. ——— Bald Pate mine, two miles north of Port Murray, Warren county.
 36. ——— Searle mine, two miles southwest of Hacketts-town, Warren county.
 - *37. Rocks, Suite of, Naughtright mine, Naughtrightville, Morris county.
 38. Gneiss (*disintegrated*), Lockwood, Sussex county.
 39. Gneiss, Herrick's quarry, near Sussex R. R., Byram township, Sussex county.
 40. ——— Sparta turnpike, one mile northwest of Berkshire Valley, Morris county.
 41. ——— Summit of Sparta mountain, Sparta turnpike.
 42. ——— Hurdtown Apatite mine, Hurdtown, Morris county.
 43. ——— Hurd mine, Hurdtown, Morris county.
 - *44. Rock, Ford mine, Morris county.
 - *45. ——— Scofield mine, Morris county.
 46. Syenite, N. J. Midland R. R. cut, Stockholm, Passaic county.
 47. Gneiss, One mile south of Vernon, on road to Snufftown, Sussex county.
 48. Syenite, One and one-half miles south of Vernon, Sussex county.
 49. Gneiss, Wawayanda mountain, near Vernon, Sussex county.
 50. ——— Green mine, Vernon township, Sussex county.
 51. Slate, Talcoid, Bel. Del. R. R. cut, Marble mountain, Warren county.
 52. Gneiss, Bel. Del. R. R. cut, one-half mile north of Marble mountain, Warren county.

-
53. Syenite, Ragged Ridge, Harmony township, Warren county.
 - *54. Rock, Roxburg, Warren county.
 55. Gneiss, Near Oxford, on Brasscastle road, Warren county.
 - 55A. Granite, Near Oxford, on Brasscastle road, Warren county.
 56. ——— Pequest cut, one and one-quarter miles east of Butzville, Warren county.
 57. Rock, Pequest mine, Warren county.
 58. Gneiss, Jenny Jump mountain, Hope and Danville road, Warren county.
 59. Rock, Garnet, Welch lot, west side of Great Meadows, Jenny Jump mountain, Warren county.
 60. Rock, Talcoid, Near A. Davis' house, northeast end of Jenny Jump mountain, Warren county.
 - *61. Rocks, Suite of, Howell farm, Jenny Jump mountain, Warren county.
 62. Gneiss, with Magnetite, Lesbie shaft, Warrentown, Warren county.
 - 62A. Gneiss, Hibler farm, Warrentown, Warren county.
 63. ——— Andover mine, Andover, Sussex county.
 - *64. Rocks, Suite of, Roseville mine, Byram township, Sussex county.
 65. Gneiss, House's corner, Sussex county.
 66. ——— Quarry near the Fowler mansion, Franklin Furnace, Sussex county.
 - 66A. ——— Furnace vein, Mine Hill, Franklin Furnace, Sussex county.
 68. ——— Near Phillip Decker's house, northwest slope of Pochuck mountain, Sussex county.
 69. ——— (*disintegrated*), Trenton, Mercer county.
 - *70. Gneiss, Jersey City, Hudson county.

Crystalline Limestone.

71. Crystalline Limestone, H. C. Sanders' quarry, two miles east of Mendham, Morris county.
- 71A. ——— H. C. Sanders' quarry, two miles east of Mendham, Morris county.
72. ——— J. J. Gordon's quarry, two miles north of Montville, Morris county.
- 72A. ——— with Serpentine, J. J. Gordon's quarry, two miles north of Montville, Morris county.
73. Crystalline Limestone, DeBow's quarry, Wynockie, Passaic county.
- 73A. ——— with Serpentine, DeBow's quarry, Wynockie, Passaic county.
74. Crystalline Limestone, Beam Tract, two miles north of Bloomingdale, Passaic county.
- *75. ——— Near Windbeam mountain, Pompton township, Passaic county.
- *76. ——— Board mine tract, Pompton township, Passaic county.
77. ——— Marble mountain, Warren county.
- 77A. ——— with Gneiss, Marble mountain, Warren county.
78. Crystalline Limestone, G. H. Cline's quarry, Lower Harmony, Warren county.
79. ——— (Quarry for Steatite), Roxburg, Warren county.
80. ——— Schuler mine, near Roxburg, Warren county.
81. ——— Near Oxford, on road to Brasscastle, Warren county.
82. ——— Phillip Raub's quarry, two miles west of Oxford Furnace, Warren county.
83. ——— E. J. Falkner's quarry, two miles west of Oxford Furnace, Warren county.

-
84. Crystalline Limestone, ("Rose Crystal Marble,") Rose Crystal Marble quarry, Hope and Danville road, Jenny Jump mountain, Warren county.
 - 84A. Crystalline Limestone, Rose Crystal Marble quarry, Hope and Danville road, Jenny Jump mountain, Warren county.
 85. ——— with Garnet, Welch lot, Jenny Jump mountain, west side of Great Meadows, Warren county.
 86. Crystalline Limestone, Crane Iron Company's farm, east slope of Jenny Jump mountain, Warren county.
 87. Crystalline Limestone, Musconetcong Iron Works' quarry, Lockwood, Sussex county.
 - 87A. Gneiss, in Crystalline Limestone, Musconetcong Iron Works' quarry, Lockwood, Sussex county.
 88. Crystalline Limestone, Glendon Iron Company's mine, two miles southwest of Andover, Sussex county.
 - 88A. ——— Manganiferous, Glendon Iron Company's mine, two miles southwest of Andover, Sussex county.
 89. Crystalline Limestone, White, Boonton Iron Company's quarry, near Andover, Sussex county.
 - 89A. Crystalline Limestone, Flesh-colored, Boonton Iron Company's quarry, near Andover, Sussex county.
 90. Crystalline Limestone, M. N. Appleget's quarry, near Roseville, Sussex county.
 91. ——— Near Sussex Lead mine, Pinkneyville, Sussex county.
 92. ——— Samuel Woodruff's quarry, Sparta, Sussex county.
 - 92A. ——— with Chondrodite, Samuel Woodruff's quarry, Sparta, Sussex county.
 93. Crystalline Limestone, Pimple Hill, northwest of Sparta, Sussex county.
 94. ——— Homestead Company's quarry, Franklin Furnace, Sussex county.

-
95. Crystalline Limestone, Double rock, Mine Hill, Franklin Furnace, Sussex county.
 96. ——— G. W. Rude's quarry, near Hardyston, Sussex county.
 97. ——— J. H. Brown's quarry, near Hamburg, Sussex county.
 98. ——— White Rock Lime and Cement Company's quarry, near McAfee Valley, Sussex county.
 99. ——— North Vernon, Vernon township, Sussex county.
 100. Serpentine and Magnesite, Hoboken, Hudson county.

Silurian Formations.

These formations are the lowest and oldest rocks of the geological series which contain fossils. The rocks are sandstones, limestones and slates. These formations occupy many of the valleys between the mountains of Azoic rock and the whole of a belt of country fifteen or twenty miles wide, northwest of and adjoining these mountains. A marked feature of this district is the high, narrow and long ridge which is near its northwestern border, and which is known in New Jersey as the Blue Mountain, in New York as the Shawangunk Mountain, and in Pennsylvania as the Kittatinny Mountain. The divisions of the Silurian are the

Potsdam Sandstone, including the Green Pond Mountain Conglomerate, which is the oldest; and then, in order, the Magnesian Limestone, the Trenton Limestone, the Hudson River Slates, the Oneida Conglomerate, the Medina Sandstone, and the Lower Helderberg and associated limestones. The rich farming lands of Sussex and Warren counties are on the Magnesian Limestone, and the grazing and dairying lands are on the Hudson River Slates. The area covered by these formations is about six hundred and fifty square miles.

Potsdam Sandstone.

101. **Quartzite**, Near S. A. Leigh's, three miles southwest of Lebanon, Hunterdon county.
102. **Sandstone**, Near the South Branch, one mile south of High Bridge, Hunterdon county.
103. ——— Wm. H. Yawger's farm, one mile northeast of Clinton, Hunterdon county.
104. ——— D. L. & W. R. R. cut, Changewater, Hunterdon county.
105. ——— D. L. & W. R. R. cut, Washington, Warren county.
106. ——— near Karrsville, Pohatcong Valley, Warren county.
107. ——— Oxford Furnace, Warren county.
108. ——— D. L. & W. R. R. cut, one-half mile east of Butzville, Warren county.
109. ——— S. T. Scranton's quarry, east of Great Meadows, Warren county.
110. ——— Nelson Cummins' quarry, east of Great Meadows, Warren county.
111. ——— Thos. Haggerty's lands, Allamuchy, Warren county.

-
112. Sandstone, Near the Fowler mansion, Franklin Furnace, Sussex county.
113. ——— Near Vernon, Sussex county.
- 113A. Slaty Rock, Near Vernon, Sussex county.
114. Sandstone, Mount Paul, Mendham township, Morris county.
115. Sand-Rock, Boonton Iron Company's sand pit, Flanders, Morris county.
116. Sandstone, McDougall's quarry, near McCainsville, Morris county.
117. ——— White Rock cut, D. L. & W. R. R., east of Drakesville, Morris county.
118. ——— Murdock's quarry, Green Pond mountain, one-half mile east of Berkshire Valley, Morris county.
119. Slaty Rock, Upper Longwood, west slope of Green Pond mountain, Morris county.
120. ——— West slope of Green Pond mountain, near Woodstock Forge, Morris county.
121. Red Slate, Green Pond mountain, one mile south of Newfoundland, Morris county.
122. Quartzose Conglomerate, Ledges near Green Pond mines, Copperas mountain, Morris county.
123. Red Slate, Near Milton, northeast slope of Bowling Green mountain, Morris county.
124. Grey Slaty Rock, Clinton Falls, Passaic county.
125. Quartzose Conglomerate, Ridge east of West Milford, Passaic county.
126. ——— (*Boulder*), Near Denville, Morris county.
- 126A. ——— (*Boulder*), Boonton, Morris county.

Magnesian Limestone.

127. Magnesian Limestone, Thomas Adams' quarry, Peapack, Somerset county.

-
128. **Magnesian Limestone**, Lewis Van Dorn's quarry, Peapack, Somerset county.
 129. ——— Daniel Jerolomon's quarry, Peapack, Somerset county.
 130. ——— John Phillhower's quarry, one mile north of Peapack, Morris county.
 131. ——— Moses Craig's quarry, Peapack, Somerset county.
 132. ——— Nesbitt's quarry, Roxiticus, Morris county.
 133. ——— Fulkerson's quarry, near Annandale, Hunterdon county.
 134. ——— J. Mulligan's quarry, Clinton, Hunterdon county.
 135. ——— John Cole's quarry, Clinton, Hunterdon county.
 136. ——— Quarry on Allerville road, one-half mile south of Annandale, Hunterdon county.
 137. ——— Sharp's quarry, three miles southwest of Lebanon, Hunterdon county.
 138. ——— S. H. Leigh's quarry, three miles southwest of Lebanon, Hunterdon county.
 - *139. ——— (*White Limestone in Blue*), Maurice Sharp's lands, one mile south of High Bridge, Hunterdon county.
 - *140. **Magnesian Limestone**, Chas. Conover's quarry, three-quarters of a mile south of High Bridge, Hunterdon county.
 141. ——— G. W. Van Syckel's quarry, near Little York, Hunterdon county.
 - 141A. ——— Slaty, G. W. Van Syckel's quarry, near Little York, Hunterdon county.
 142. **Magnesian Limestone**, Old quarry near the church, Johnson's Ferry, Hunterdon county.
 - *143. ——— German Valley, Morris county.
 144. ——— Gould farm, West Milford, Passaic county.

-
145. **Magnesian Limestone**, Wm. Cisco's quarry, West Milford, Passaic county.
146. ——— Alexander Smith's quarry, Riegelsville, Hunterdon county.
- 146A. ——— **Slaty**, Alexander Smith's quarry, Riegelsville, Hunterdon county.
147. **Magnesian Limestone**, J. Hart's quarry, near Bloomsbury, Warren county.
148. ——— Bethlehem tunnel, Easton and Amboy R. R., Hunterdon county.
- 148A. ——— (*Slaty Rock*), Easton and Amboy R. R., west end; Bethlehem tunnel, Hunterdon county.
149. ——— Williver's quarry, near Asbury, Hunterdon county.
150. ——— James Riddle's quarry, New Hampton, Warren county.
151. ——— D. L. & W. R. R. cut, Changewater, Hunterdon county.
152. ——— D. L. & W. R. R. cut, two miles east of Washington, Warren county.
153. ——— (*Altered*), D. L. & W. R. R. cut, one mile west of Changewater, Warren county.
154. ——— J. B. Fisher's quarry, Beattystown, Warren county.
155. ——— Wm. Vliet's quarry, near Beattystown, Warren county.
156. ——— Hackettstown Furnace Company's quarry, one mile south of Hackettstown, Warren county.
- 156A. ——— with **Chert**, Hackettstown Furnace Company's quarry, one mile south of Hackettstown, Warren county.
157. **Magnesian Limestone**, J. Fine's quarry, Carpenterville, Warren county.
158. ——— Charles Farney's quarry, Carpenterville, Warren county.

159. **Magnesian Limestone**, Charles W. Cope's quarry, Carpenterville, Warren county.
160. ——— Gneiss Hill, Phillipsburg, Warren county.
161. ——— P. Kline's quarry, Lower Harmony, Warren county.
162. ——— (*Slaty Rock*), Thatcher mine, near Stewartsville, Warren county.
163. ——— C. Carhart's quarry, one mile west of Washington, Warren county.
164. ——— Oxford Furnace, Warren county.
165. ——— Page's quarry, three miles northeast of Oxford Furnace, Warren county.
166. ——— quarry of J. K. & W. Miller, one mile east of Belvidere, Warren county.
167. ——— D. L. & W. R. R. cut, near Bridgeville, Warren county.
168. ——— D. L. & W. R. R. cut, one-half mile east of Butzville, Warren county.
169. ——— J. Park's quarry, Green's Pond, Hope township, Warren county.
170. ——— Thomas Haggerty's land, Allamuchy, Warren county.
171. ——— On Hope road, near Johnsonburg, Warren county.
172. ——— Musconetcong Iron Work's quarry, near Andover, Sussex county.
173. ——— (*Calciferous Rock*), Roseville, Sussex county.
174. ——— Quarry near railroad station, Newton, Sussex county.
175. ——— (*Building Stone*), Babbitt's quarry, Newton, Sussex county.
176. ——— Ledge near foundry, Lower Lafayette, Sussex county.
177. ——— Wallkill Cement and Lime Company's quarries, Hamburgh, Sussex county.

-
- 177A. **Magnesian Limestone**, (*Cement Stone*), Lawrence quarry, Hamburg, Sussex county.
178. ——— J. H. Brown's quarry, Hamburg, Sussex county.
179. ——— Ledge near the Fowler mansion, Franklin Furnace, Sussex county.
180. ——— Joseph Brennan's quarry, H. Berry's lands, Deckertown, Sussex county.
181. ——— Chandler's Island, Drowned lands, Wantage township, Sussex county.
182. ——— J. R. Bellis' quarry, Columbia, Warren county.
183. ——— D. Struble's lands, Balesville, Sussex county.
184. ——— Ledge near Branchville, Sussex county.
185. ——— Jesse G. Roe's lands, Branchville, Sussex county.
186. ——— **Metamorphic, with Serpentine**, C. Struble's quarry, Augusta, Sussex county.

Fossiliferous Limestone.

187. **Fossiliferous Limestone**, Upper Longwood, Morris county.
188. ——— Woodstock Forge, Morris county.
189. ——— Van Syckle's place, near Belvidere, Warren county.
190. ——— Hope road, near Johnsonburg, Warren county.
191. ——— Babbitt estate, Newton, Sussex county.
192. ——— Samuel Anderson's lands, three miles west of Newton, Sussex county.
193. ——— Jesse G. Roe's land, Branchville, Sussex county.

Hudson River Slate.

194. Slate, Ledge near Old Forge, Upper Longwood, Morris county.
195. ——— (*Weathered*), D. L. & W. R. R. Cut, near Port Murray, Warren county.
196. ——— Slate quarry near Hackettstown, Warren county.
197. ——— Boyer's quarry, Sarepta, Warren county.
198. ——— Bel. Del. R. R. cut, near Manunka Chunk, Warren county.
199. ——— D. L. & W. R. R. cut, Ramseysburg, Warren county.
200. ——— Delaware Water Gap Slate quarry, Delaware Water Gap, Warren county.
201. ——— Ledge on roadside, near Augusta, Sussex county.
202. ——— Anderson's quarry, Newton, Sussex county.
203. ——— Ledge on roadside, Lafayette, Sussex county.
204. ——— M. R. Kays' quarry, Lafayette, Sussex county.
205. ——— (*Indurated*), Blue mountain, west of Beemersville, Sussex county.
206. ——— (*Massive*), Flagstone Hill, Wantage township, Sussex county.
207. ——— Port Jervis turnpike, one mile northwest of Coleville, Sussex county.
208. Labrador Rock, Dike; west of Beemersville, Blue mountain, Sussex county.

Oneida Conglomerate.

209. Quartzose Conglomerate, Delaware Water Gap, Warren county.
210. Quartzite, Delaware Water Gap, Warren county.
211. ——— Near Warren Slate Works, Delaware Water Gap, Warren county.

-
212. **Quartzose Conglomerate**, Culver's Gap, Sussex county.
213. **Quartzite**, Culver's Gap, Sussex county.
214. **Quartzose Conglomerate**, High Point, Blue mountain, Sussex county.

Medina Sandstone.

215. **Slaty Rock**, Near Warren Slate Works, Delaware, Water Gap, Warren county.
215A. **Slaty Rock**, Near Warren Slate Works, Delaware Water Gap, Warren County.
216. **Red Slate**, Shoemaker's, near Labar's Island, Paha-quarry, Warren county.
217. **Red Slaty Rock**, Near Dwaas's Kill, Blue mountain, Sussex county.
218. ——— Sandford Nearpass' lands, Blue mountain, Sussex county.
219. ——— Red Brook, Montague township, Sussex county.

Water Lime Group.

221. **Ribbon Limestone**, Stoll's quarry, one-half mile south of Wallpack Centre, Sussex county.
222. ——— B. Cole's quarry, two miles south of Wallpack Centre, Sussex county.
223. ——— Fuller's quarry, Pompey Ridge, Wallpack, Sussex county.

Lower Helderberg Limestone.

224. **Fire-stone**, Wm. Nearpass' quarry, Montague, Sussex county.
225. **Slate**, William Nearpass' quarry, Montague, Sussex county.

226. Coralline Limestone, William Nearpass' quarry, Montague, Sussex county.
227. Pest Stone, William Nearpass' quarry, Montague, Sussex county.
228. Old Quarry Stone, William Nearpass' quarry, Montague, Sussex county.
229. Slaty Rock, William Nearpass' quarry, Montague, Sussex county.
230. Knotty Limestone. William Nearpass' quarry, Montague, Sussex county.
231. Quarry Stone, William Nearpass' quarry, Montague, Sussex county.
232. Pentamerus Limestone, William Nearpass' quarry, Montague, Sussex county.
233. Cherty Limestone, William Nearpass' quarry, Montague, Sussex county.
234. Pentamerus Limestone, Sandford Nearpass' quarry, Montague township, Sussex county.
235. Limestone, Isaac Bonnell's quarry, Montague township, Sussex county.
236. Pentamerus Limestone, J. Schooley's quarry, Peter's Valley, Sussex county.
237. Limestone, Wallpack Ridge, west of Flatbrookville, Sussex county.

Devonian Formations.

These formations have but a very limited exposure in New Jersey, along the Delaware from the New York State line to the Wallpack bend. The area included is about forty square miles. There are some valuable limestones and some good soils, but much of it is encumbered with drift.

Oriskany Sandstone.

- 241. **Shale**, Chambers' Mill Brook, Montague township, Sussex county.
- 242. ——— One-half mile west of Centreville, Sussex county.
- 243. ——— One mile south of Wallpack Centre, Sussex county.

Cauda-Galli Grit.

- 245. **Slaty Grit**, One mile west of Centreville, Dingman's Ferry road, Sussex county.
- *246. **Fossils**, Hornbeck's Mills, Montague township, Sussex county.

Corniferous Limestone.

- 247. **Limestone**, Carpenter's Point, Sussex county.
- 248. ——— Delaware river bank, near Mashipacong Island, Montague township, Sussex county.

249. Limestone, Milford Bridge, Montague township, Sussex county.
250. ——— Delaware river bank, Dingman's Ferry, Sandiston township, Sussex county.

Marcellus Shale.

251. Marcellus Shale, Delaware river bank, opposite Mashipacong Island, Montague township, Sussex county.
-

Triassic Formations.

This formation includes the Red Sandstone of the State. It is characterized by its red color, and its surface is marked by many abrupt mountain ridges of trap rock. It occupies the belt of country next southeast of the Azoic region. It is about twenty miles wide, and extends entirely across from the Hudson to the Delaware. Its area is 1,543 square miles. The rock contains many beds of excellent free stone, which is extensively quarried. The soil, though not rich, is generously responsive to good cultivation, and has been specially noted for the excellent quality of the fruit grown upon it.

253. Sandstone, Feldspathic, Under trap rock of Palisades, Weehawken, Hudson county.

-
254. Sandstone, Under trap rock of Palisades, Weehawken, Hudson county.
255. ——— Feldspathic, Trenton, Mercer county.
256. Sandstone, E. P. Dow's quarry, Pluckamin, Somerset county.
257. ——— Horner's quarry, Pompton Furnace, Passaic county.
- 257A. Shale, Horner's quarry, Pompton Furnace, Passaic county.
- 257B. Conglomerate, Horner's quarry, Pompton Furnace, Passaic county.
258. Red Shale, Rev. Robert Van Amburgh's lands, Lebanon, Hunterdon county.
259. ——— Manganese mine, near Clinton, Hunterdon county.
260. Flagging Stone, Smith Clark's quarry, Milford, Hunterdon county.
261. ——— M. McQuire's quarry, Milford, Hunterdon county.
262. Red Shale, River bluff, one mile northwest of Milford, Hunterdon county.
263. Quartzose Conglomerate, Johnson's Ferry, Hunterdon county.
264. Calcareous Conglomerate, Andrew Van Syckle's quarry, three miles northeast of Lebanon, Hunterdon county.
265. ——— Robert Craig's quarry, near New Germantown, Hunterdon county.
266. ——— containing Gneiss Pebble, New Germantown, Hunterdon county.
267. Calcareous Conglomerate, P. W. Melick's quarry, New Germantown, Hunterdon county.
268. ——— Jas. Ramsey's quarry, New Germantown, Hunterdon county.

269. Limestone, Between First and Second mountains, Feltville, Union county.
270. Lignite, Alyea's quarry, Essex county.
273. Trap Rock, Bergen Hill, Hudson county.
- 273A. ——— Bergen Hill, Hudson county.
274. ——— Gap, First mountain, Plainfield, Union county.
- 275A. ——— Gap, First mountain, Plainfield, Union county.
276. ——— Rocky Hill, Somerset county.
277. ——— Round Valley mountain, Hunterdon county.
278. ——— Silver Hill, New Germantown, Hunterdon county.
279. ——— (*Blue, for Rubble and Paving Blocks*), Lambertville Quarry Company, Goat Hill, Hunterdon county.
280. ——— (*Grey, for Paving Blocks*), Lambertville Quarry Company, Goat Hill, Hunterdon county.
282. ——— (*Touchstone*), Point Pleasant, Hunterdon county.
-

Cretaceous Formations.

These formations are characterized by containing extensive and valuable beds of fire clay, and of greensand. The belt of country in which they occur adjoins the Triassic on

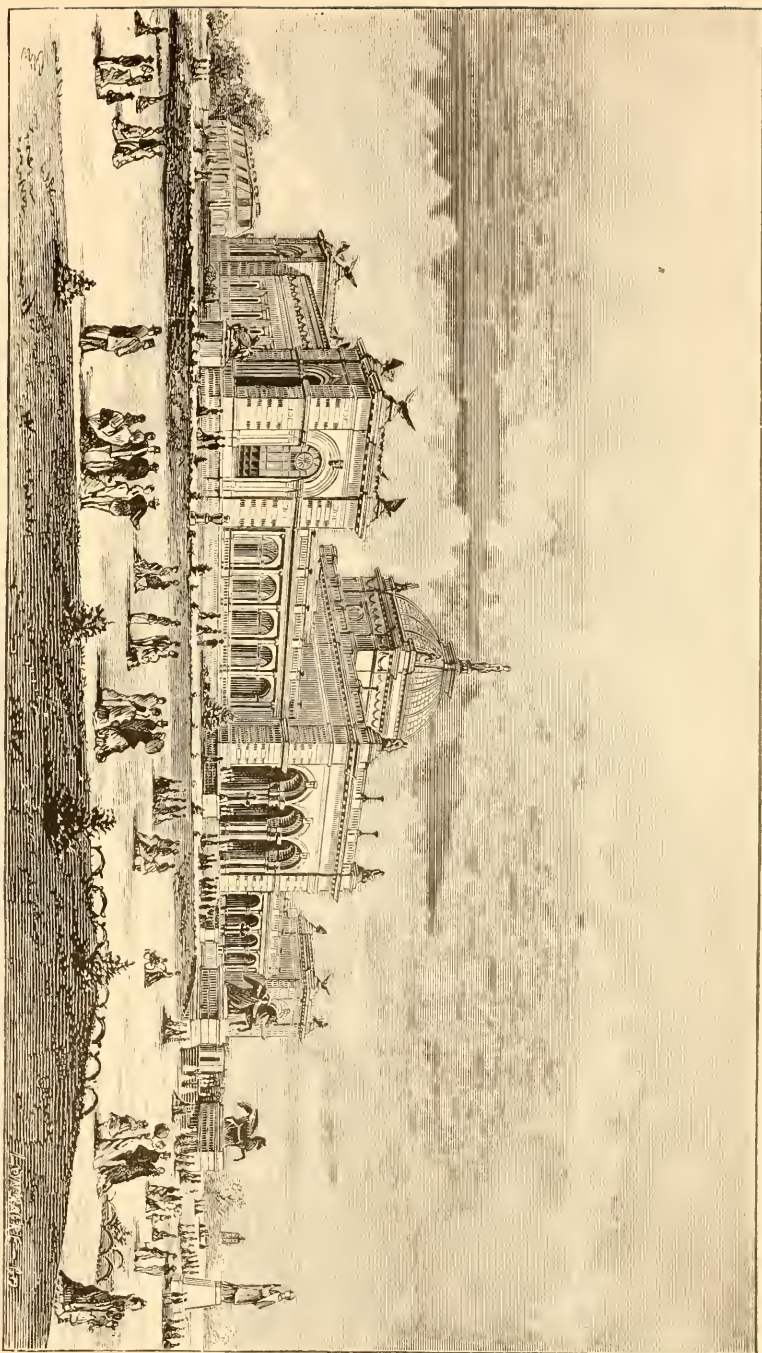
its northwest border, and extends from the Raritan Bay and the seaside to the Delaware River near Salem. It is near 90 miles long and from 12 to 15 miles wide, and has an area of 1,491 square miles. The white clays occupy the northwestern side of the belt, and the greensand marls the southeastern side.

The clays are extensively used for the commoner kinds of pottery, and fire bricks made from them are among the most infusible known, and they are more used for refractory materials than any other in the country.

The marls have been largely used by farmers, and they have produced most remarkable effects on the soil, restoring fertility to worn out and abandoned fields, and bringing productiveness and thrift to the whole district where they can be used.

- 290. **Fire Clay**, Wm. B. Dixon's pits, Woodbridge, Middlesex county.
- 290A. ——— **Sandy**, Wm. B. Dixon's pits, Woodbridge, Middlesex county.
- 291. **Retort Clay, Top**, Wm. P. Edgar's pits, Woodbridge, Middlesex county.
- 291A. **Red Sagger Clay**, Wm. P. Edgar's pits, Woodbridge, Middlesex county.
- 291B. **Fire Clay**, Wm. P. Edgar's pits, Woodbridge, Middlesex county.
- 292. **Black Clay**, Wm. H. Berry's pits, Drummond farm, Woodbridge, Middlesex county.
- 292A. **Sagger Clay**, Wm. H. Berry's pits, Drummond farm Woodbridge, Middlesex county.
- 292B. **Retort Clay**, Wm. H. Berry's pits, Drummond farm, Woodbridge, Middlesex county.
- 293. **Clay, with Lignite**, Salamander Works' pits, Woodbridge, Middlesex county.

- 293A. **Alum Clay**, Salamander Works' pits, Woodbridge, Middlesex county.
- 293B. **Fire Clay**, Salamander Works' pits, Woodbridge, Middlesex county.
- 293C. **Red Clay**, Salamander Works' pits, Woodbridge, Middlesex county.
294. **Sandy Clay, Top**, David Ayers' pits, Woodbridge, Middlesex county.
- 294A. **Alum Clay**, David Ayers' pits, Woodbridge, Middlesex county.
- 294B. **Fire Clay**, David Ayers' pits, Woodbridge, Middlesex county.
- 294C. **Red Clay**, David Ayers' pits, Woodbridge, Middlesex county.
295. **Black Clay, Top**, Loughridge & Powers' pits, Woodbridge, Middlesex.
- 295A. **Black Pipe Clay**, Loughridge & Powers' pits, Woodbridge, Middlesex county.
- 295B. **Top Clay, Sandy**, (*for pipe*), Loughridge & Powers' pits, Woodbridge, Middlesex county.
- 295C. **Alum Clay**, Loughridge & Powers' pits, Woodbridge, Middlesex county.
- 295D. **Ware Clay**, Loughridge & Powers' pits, Woodbridge, Middlesex county.
- 295E. **Red Sagger Clay**, Loughridge & Powers' pits, Woodbridge, Middlesex county.
- 295F. **Extra Sandy Clay**, Loughridge & Powers' pits, Woodbridge, Middlesex county.
296. **Black Clay, Top**, A. Hall & Son's pits, Woodbridge, Middlesex county.
- 296A. **Blue and Buff Clay, Top**, A. Hall & Son's pits, Woodbridge, Middlesex county.
- 296B. **Alum Clay**, A. Hall & Son's pits, Woodbridge, Middlesex county.



MEMORIAL HALL.

-
- 296C. Fire Clay, A. Hall & Son's pits, Woodbridge, Middlesex county.
- 296D. Extra Sandy Clay, A. Hall & Son's pits, Woodbridge, Middlesex county.
297. Clay, (*for Stoneware*), J. R. Watson's bank, Woodbridge, Middlesex county.
- 297A. ——— (*for Stoneware*), J. R. Watson's E. pits, Woodbridge, Middlesex county.
- 297B. Alum Clay, J. R. Watson's bank, Woodbridge, Middlesex county.
- 297C. Fire Clay, J. R. Watson's bank, Woodbridge, Middlesex county.
298. Clay, (*for Stoneware*), S. A. Meeker & Son's pits, Woodbridge, Middlesex county.
- 298A. Black Pipe Clay, S. A. Meeker & Son's pits, Woodbridge, Middlesex county.
- 298B. Retort Clay, S. A. Meeker & Son's pits, Woodbridge, Middlesex county.
- 298C. Fire Clay, S. A. Meeker & Son's pits, Woodbridge, Middlesex county.
- 298D. Sandy Clay, Bottom, S. A. Meeker & Son's pits, Woodbridge, Middlesex county.
- 298E. Clay, (*for Stoneware*), S. A. Meeker & Son's west pits, Woodbridge, Middlesex county.
- 298F. ——— No. 2, (*for Stoneware*), S. A. Meeker & Son's west pits, Woodbridge, Middlesex county.
299. Pipe Clay, S. A. Meeker & Son's pits, south of Woodbridge, Middlesex county.
- 299A. Black Pipe Clay, S. A. Meeker & Son's pits, south of Woodbridge, Middlesex county.
300. White Clay, Top, Isaac Flood's pits, Woodbridge, Middlesex county.
- 300A. Retort Clay, Isaac Flood's pits, southwest of Woodbridge, Middlesex county.

- 301. Black Clay, Top, H. Cutter's pits, Woodbridge, Middlesex county.
- 301A. Sandy Clay, Top H. Cutter's pits, Woodbridge, Middlesex county.
- 301B. Fire Clay, H. Cutter's pits, Woodbridge, Middlesex county.
- 301C. Ware Clay, H. Cutter's pits, Woodbridge, Middlesex county.
- 301D. Paper Clay, H. Cutter's pits, Woodbridge, Middlesex county.
- 301E. Red Clay, H. Cutter's pits, Woodbridge, Middlesex county.
- 301F. Extra Sandy Clay, H. Cutter's pits, Woodbridge, Middlesex county.
- 302. Sandy Clay, Top, W. H. P. Benton's pits, Woodbridge, Middlesex county.
- 302A. Retort Clay, W. H. P. Benton's pits, Woodbridge, Middlesex county.
- 302B. Fire Clay, W. H. P. Benton's pits, Woodbridge, Middlesex county.
- 302C. Sandy Clay, Bottom, W. H. P. Benton's pits, Woodbridge, Middlesex county.
- 303. Pipe Clay, Charles Anness & Son's pits, Woodbridge, Middlesex county.
- 303A. Fire Clay, Charles Anness & Son's pits, Woodbridge, Middlesex county.
- 304. Top Clay, "Specky," (*for pipe*), Woodbridge Clay Company's pits, Woodbridge township, Middlesex county.
- 304A. Clay, "Seamy," (*for pipe*), Woodbridge Clay Company's pits, Woodbridge township, Middlesex county.
- 304B. Fire Clay, Woodbridge Clay Company's pits, Woodbridge township, Middlesex county.
- 304C. ——— No. 2, Woodbridge Clay Company's pits, Woodbridge township, Middlesex county.

-
- 304D. Extra Sandy Clay, Woodbridge Clay Company's pits, Woodbridge township, Middlesex county.
305. Black Pipe Clay, A. Weber's bank, north bank of Raritan river, Woodbridge township, Middlesex county.
- 305A. Blue Pipe Clay, A. Weber's bank, north bank of Raritan river, Woodbridge township, Middlesex county.
- 305B. Top Clay, White, (*for pipe*), A. Weber's bank, north bank of Raritan river, Woodbridge township, Middlesex county.
- 305C. Fire Clay, A. Weber's bank, north bank of Raritan river, Woodbridge township, Middlesex county.
- 305D. Extra Sandy Clay, A. Weber's bank, Woodbridge township, Middlesex county.
306. Blue Pipe Clay, East bank of Crossman Clay and Manufacturing Company, Woodbridge township, Middlesex county.
- 306A. Top Clay, White (*for pipe*), East bank of Crossman Clay and Manufacturing Company, Woodbridge township, Middlesex county.
- 306B. Fire Clay, East bank of Crossman Clay and Manufacturing Company, Woodbridge township, Middlesex county.
307. Blue Pipe Clay, West bank of Crossman Clay and Manufacturing Company, Woodbridge township, Middlesex county.
- 307A. Black Pipe Clay, West bank of Crossman Clay and Manufacturing Company, Woodbridge township, Middlesex county.
- 307B. Fire Clay, West bank of Crossman Clay and Manufacturing Company, Woodbridge township, Middlesex county.
308. White Fire Clay, Southwest pit, Crossman Clay and Manufacturing Company, Woodbridge township, Middlesex county.

309. **Black Clay**, Philip Neukumet's bank, Woodbridge township, Middlesex county.
- 309A. **Fire Clay**, Philip Neukumet's bank, Woodbridge township, Middlesex county.
- 309B. **Clay (from bottom)**, Philip Neukumet's bank, Woodbridge township, Middlesex county.
310. **Blue Fire Clay**, Charles A. Campbell & Co.'s pits, Woodbridge township, Middlesex county.
- 310A. **Fire Clay, No. 1**, Charles A. Campbell & Co.'s pits.
- 310B. **White Fire Clay**, Charles A. Campbell & Co.'s pits.
- 310C. **Sandy Clay**, Charles A. Campbell & Co.'s pits.
311. **Black Clay**, R. N. & H. Valentine's bank, Raritan township, Middlesex county.
- 311A. **White Fire Clay**, R. N. & H. Valentine's bank, Raritan township, Middlesex county.
- 311B. **Fire Clay, No. 1**, R. N. & H. Valentine's bank, Raritan township, Middlesex county.
312. **Clay**, David Flood's pits, south of Bonhamtown, Middlesex county.
313. ——— A. M. Freeman's pits, near Bonhamtown, Middlesex county.
314. ——— W. N. Weidener's pits, near Martin's Dock, Piscataway township, Middlesex county.
315. **Kaolin, or "Feldspar," No. 1**, W. N. Weidener's pits, Perth Amboy township, Middlesex county.
- [See foot note.]
- 315A. ——— **No. 2**, W. N. Weidener's pits, two miles southwest of Woodbridge, Middlesex county.
- 315B. **Micaceous Sand, or "Kaolin,"** W. N. Weidener's pits, two miles southwest of Woodbridge, Middlesex county.

NOTE.—A strange perversion of the words *Kaolin* and *Feldspar* has become settled among the dealers in clay and other refractory materials about Woodbridge and Amboy, in Middlesex county. The term "Kaolin," is there applied to a very fine white sand, containing a small percentage of clay. The term "Feldspar" is given to a natural material, which consists of coarse, angular grains of quartz, mixed with a large percentage of refractory but not very plastic clay. The term *Micaceous Sand* may properly be applied to the first of these. And the "Feldspar," after the quartz is washed out, is really Kaolin, or china clay. In deference to the local practice, these common terms have been used in this catalogue, but printed in quotation marks.

-
316. **Kaolin, or "Feldspar,"** Charles Anness & Son's pits, two miles southwest of Woodbridge, Middlesex county.
- 316A. **Red Clay, Feldspar pits,** Charles Anness & Son, Woodbridge township, Middlesex county.
- 316B. **Sandy Clay, Feldspar pits,** Charles Anness & Son, Woodbridge township, Middlesex county.
317. **Kaolin, or "Feldspar,"** M. Pinner's pits, Perth Amboy, Middlesex county.
318. ——— No. 1, Edgar Bros'. pits, Woodbridge township, Middlesex county.
- 318A. ——— No. 2, Edgar Bros'. pits, Woodbridge township, Middlesex county.
- 318B. **Clay, Edgar Bros'. Feldspar pits,** Woodbridge township, Middlesex county.
319. **Kaolin, or "Feldspar,"** B. Valentine's pits, Perth Amboy, Middlesex county.
320. **Micaceous Sand, or "Kaolin,"** Merritt's pits, Perth Amboy, Middlesex county.
321. ——— N. Y. & L. B. R. R. cut, James Valentine's lands, Perth Amboy, Middlesex county.
322. ——— Easton and Amboy R. R. cut, Perth Amboy, Middlesex county.
323. ——— David Flood's pits, near Bonhamtown, Middlesex county.
324. ——— R. N. & H. Valentine's pits, Raritan township, Middlesex county.
325. **Kaolin, or "Feldspar,"** J. N. Coleman's pits, South Amboy, Middlesex county.
326. **Micaceous Sand, or, "Kaolin,"** J. K. Brick estate, Burt's Creek, South Amboy, Middlesex county.
327. ——— Whitehead Bros. pits, South Amboy township, Middlesex county.
328. ——— Sayre & Fisher's bank, Sayreville, Middlesex county.
329. ——— Whitehead Bros. bank, Washington, Middlesex county.

330. Buff Fire Clay, E. F. Roberts' pits, north bank of Raritan river, Woodbridge township, Middlesex county.
- 330A. Blue Fire Clay, E. F. Roberts' pits, north bank of Raritan river, Woodbridge township, Middlesex county.
- 330B. Dark-Spotted Clay, E. F. Roberts' pits, north bank of Raritan river, Woodbridge township, Middlesex county.
- 330C. Light-Spotted Clay, E. F. Roberts' pits, north bank of Raritan river, Woodbridge township, Middlesex county.
- 330D. Sandy Blue Clay, E. F. Roberts' pits, north bank of Raritan river, Woodbridge township, Middlesex county.
331. Red Clay, John DeBow's pits, Woodbridge township, Middlesex county.
332. Ware Clay, E. F. & J. M. Roberts' pits, Kearney tract, South Amboy, Middlesex county.
- 332A. Paper Clay, E. F. & J. M. Roberts' pits, Kearney tract, South Amboy, Middlesex county.
- 332B. Fire Clay, E. F. & J. M. Roberts' pits, Kearney tract, South Amboy, Middlesex county.
333. Red Clay, George Such's pits, Burt's creek, South Amboy, Middlesex county.
- 333A. Spotted Clay, George Such's pits, Burt's creek, South Amboy, Middlesex county.
- 333B. Alum Clay, George Such's pits, Burt's creek, South Amboy, Middlesex county.
- 333C. Fire Clay, George Such's pits, Burt's creek, South Amboy, Middlesex county.
- 333D. Paper Clay, George Such's pits, Burt's creek, South Amboy, Middlesex county.
- 333E. ——— (Yellow), George Such's pits, Burt's creek, South Amboy, Middlesex county.
- 333F. ——— (Buff), George Such's pits, Burt's creek, South Amboy, Middlesex county.

-
334. Blue Fire Clay, No. 1, J. K. Brick estate, Burt's creek, South Amboy, Middlesex county.
- 334A. Fire Clay, No. 2, J. K. Brick estate, Burt's creek, South Amboy, Middlesex county.
- 334B. Buff Clay, J. K. Brick estate, Burt's creek, South Amboy, Middlesex county.
- 334C. Red Clay, J. K. Brick estate, Burt's creek, South Amboy, Middlesex county.
335. Clay, (*for Pottery*), Western pits; J. K. Brick estate, Burt's creek, South Amboy, Middlesex county.
336. Black "Pipe Clay, Whitehead Bros'. pits, Sayreville, Middlesex county.
- 336A. Red Clay, Whitehead Bros'. pits, Sayreville, Middlesex county.
- 336B. Fire Clay, Whitehead Bros'. pits, Sayreville, Middlesex county.
- 336C. Buff Clay, Whitehead Bros'. pits, Sayreville, Middlesex county.
- 337 White Fire Clay, Sayre & Fisher's bank, Sayreville, Middlesex county.
- 337A. Blue Fire Clay, Sayre & Fisher's bank, Sayreville, Middlesex county.
- 337B. Burned Clay, Sayre & Fisher's bank, Sayreville, Middlesex county.
338. Clay, (*for Pottery*), Wm. A. Allen's pit, South Amboy, Middlesex county.
339. Stoneware Clay, W. C. Perrine's pits, near C. & A. R. R., South Amboy township, Middlesex county.
- 339A. Clay, (*bottom of pits*), W. C. Perrine, near C. & A. R. R., South Amboy township, Middlesex county.
340. Clay, (*for Yellow Ware*), E. R. Rose & Son's pits, near C. & A. R. R., South Amboy township, Middlesex county.
- 340A. Stoneware Clay, E. R. Rose & Son's pits, near the C. & A. R. R., South Amboy township, Middlesex county.

-
- 340B. Clay (*bottom of pits*), E. R. Rose & Son's pits, near C. & A. R. R., South Amboy township, Middlesex county.
341. Spotted Clay, Morgan & Stout's bank, South Amboy, Middlesex county.
- 341A. Stoneware Clay, Morgan & Stout's bank, South Amboy, Middlesex county.
- 341B. Sandy Clay (*bottom of pits*), Morgan & Stout's bank, South Amboy, Middlesex county.
342. Stoneware Clay, Theo. Smith's pits, South Amboy township, Middlesex county.
343. ——— Otto Ernst's mine, Chesquakes, South Amboy township, Middlesex county.
- 343A. ——— Surface bed, Otto Ernst, Chesquakes, South Amboy township, Middlesex county.
344. Clay (*for Pottery*), W. C. Perrine's pits, two miles west of South Amboy, Middlesex county.
345. ——— (*for Pottery*), Everett & Fish's bank, South Amboy, Middlesex county.
346. ——— (*for Pottery*), Charles B. Reynold's pits, South Amboy township, Middlesex county.
347. ——— Bowman & Anderson's pits, near Trenton, Mercer county.
348. ——— Joshua Eayre's pits, Florence, Burlington county.
349. ——— C. Hampshire's pits, Bridgeboro, Burlington county.
350. Retort Clay, Dr. J. S. Hylton's bank, Pensauken Creek, Camden county.
352. Clay, B. A. Lodge's pits, Billingsport, Gloucester county.
353. ——— (*washed*), S. B. Shimer's mine, Bethlehem, Hunterdon county.
- Leaf Impressions, William Allen's pits, South Amboy.

Leaf Impressions, Sayre & Fisher's bank, Sayreville,
Middlesex county.
Lignite, Jacksonville, Middlesex county.

Greensand Marl Beds.

375. Clay Marl, E. Hardy's pits, Matavan, Middlesex county.
376. ——— Mulford & Pine, brick clay pits, Kinkora, Burlington county.
377. ——— John E. Hopkins' pits, Haddonfield, Camden county.
378. ——— Samuel Sharp's pits, Woodbury, Gloucester county.

LOWER MARL BED.

379. Red, or High Bank Marl, I. G. Smock's pits, Holmdel, Monmouth county.
379A. Grey Marl, I. G. Smock's pits, Holmdel, Monmouth county.
380. Shell Marl, Rev. G. C. Schanck's pits, Marlborough, Monmouth county.
380A. Sand Marl, Rev. G. C. Schank's pits, Marlborough, Monmouth county.
381. Shell Marl, O. C. Herbert's pits, Marlborough, Monmouth county.
382. Blue Marl, John R. Perrine's pits, Manalapan, Monmouth county.
383. Shell Marl, Nathan Lippincott's pits, Auburn, Salem county.
384. Green Earth (*Indurated*), Big Hill, Holmdel township, Monmouth county.
This Green Earth lies just below the Middle Marl Bed.
385. "Green-land," Blackwoodtown, Camden county.
Underlying the Middle Marl Bed.

386. "Upper Marl," B. Lodge's pits, Mantua, Gloucester county.
- 386A. "Lower Marl," B. Lodge's pits, Mantua, Gloucester county.
- 386B. "Shell Layer," B. Lodge's pits, Mantua, Gloucester county.

These "Marls" of Lodge's pits belong to the Red Sand Bed, of the Marl Series.

387. Red Sand, Mullica Hill, Gloucester county.

388. ——— Auburn, Salem county.

387 and 388 represent the Red Sand Bed, which lies between the Lower Marl Bed and the Middle Marl Bed.

MIDDLE MARL BED.

390. Limesand, Turtle Mill, near Long Branch, Monmouth county.
391. Yellow Marl, Eatontown, Monmouth county.
392. Green Marl, Blue Ball, Monmouth county.
393. ——— Cream Ridge Marl Co.'s pits, Upper Freehold, Monmouth county.
394. Chocolate Marl, Pemberton Marl Co.'s pits, Birmingham, Burlington county.
- 394A. Green Marl, Pemberton Marl Co.'s pits, Birmingham, Burlington county.
395. *Teredo Tibialis (Marl)*, Haines' Mill, near Medford, Burlington county.
396. Limesand, H. J. Irick's pits, Vincentown, Burlington county.

This layer contains much calcareous material; hence its name.

397. Green Marl, N. T. Stratton's pits, Mullica Hill, Gloucester county.
- 397A. Shell Marl, N. T. Stratton's pits, Mullica Hill, Gloucester county.
- 397B. Limesand, N. T. Stratton's pits, Mullica Hill, Gloucester county.
398. Yellow Limestone, Barber's quarry, Mannington township, Salem county.

In this the calcareous material is sufficiently large to admit of its use for making lime.

399. **Green Marl**, I. V. Dickinson & Bros.' pits, Woodstown, Salem county.

400. **Fuller's Earth**, Squankum Marl Co.'s pits, near Farmingdale, Monmouth county.

This lies just below the Upper Marl Bed.

UPPER MARL BED.

401. **Green Marl**, Squankum Marl Co.'s pits, near Farmingdale, Monmouth county.

401A. **Ash Marl**, Squankum Marl Co.'s pits, near Farmingdale, Monmouth county.

402. **Green Marl**, Vincentown, Burlington county.

403. ——— H. Adams' pits, Clementon, Camden county.

Tertiary Formations.

The southern portion of the State is mainly occupied by these formations. They consist of beds of sand and clay, and the surface is covered with a thin soil, which is not naturally very productive. Some of the clays contain shells enough to be designated as marls; and extensive beds of the purest of white sand, for glass-makers' use, are common. Some good farms are found on this formation, and

NOTE.—For additional specimens of the Greensand Marls and other natural fertilizers of the State, see under Agricultural Exhibit of the State of New Jersey, in Agricultural Hall; location E, 17 and 18.

along its borders are found some of the best farms in the State.

The drift materials are scattered very unevenly over the different formations throughout the State.

Eocene.

404. **Blue Marl**, Abner Allen's pits, Deal, Monmouth county.

This is the upper layer of the Upper (Greensand) Marl Bed; but its fossils show it to be Eocene Tertiary.

Miocene.

415. **Yellow Marl**, G. Ayars' pits, near Jericho, Cumberland county.
- 415A. **Green Marl**, G. Ayars' pits, near Jericho, Cumberland county.
- 415B. **Shell Marl**, G. Ayars' pits, near Jericho, Cumberland county.

Drift.

416. **Drift Gravel**, West Jersey R. R. cut, Vineland, Cumberland county.
- 416A. **Drift Sand**, Woodmansie, Burlington county.

Recent Formations.

417. Fossil Oyster Shells, Maurice River bank, near Port Elizabeth, Cumberland county.
418. Shells, Shell heap, Flax Island, near Tuckerton, Burlington county.
419. Infusorial Earth, Cook farm, near Drakesville, Morris county.
- 419A. ——— Cook farm, near Drakesville, Morris county.
Burned and pressed.
420. Shell Marl, Isaac Bonnell' farm, Montague, Sussex county.
421. ——— Williamsville, Vernon township, Sussex county.
422. Calcareous Sinter, Dingman's Ferry, Vernon township, Sussex county.
423. Beach Pebbles, Sea Grove, Cape May county.
424. Beach Sand, Sea Grove, Cape May county.
425. ——— Old Beach, Atlantic City, Atlantic county.
426. ——— New Beach, Atlantic City, Atlantic county.
427. Silicified Wood, Poke Hill, Burlington County.

Minerals.

501. Zincite, Tephroite and Calcite, Franklin Furnace, Sussex county.
503. Willemite, Garnet and Franklinite, Franklin Furnace, Sussex county.
Willemite of rare quality.
504. Willemite and Garnet, Franklin Furnace, Sussex county.
Willemite of rare quality.
- 504A. Willemite, Franklin Furnace, Sussex county.
Of rare quality.
505. Calamine, Stirling Hill, Sussex county.
Five specimens, two of which are in the top of case.
506. Sussexite and Zincite in Calcite, Franklin Furnace, Sussex county.
507. Fowlerite in Calcite, Franklin Furnace, Sussex county.
Three specimens.
508. Fowlerite and Franklinite in Calcite, Franklin Furnace, Sussex county.
509. Zincite, Willemite and Franklinite, Franklin furnace, Sussex county.
510. Pyrrhotite, Newton, Sussex county.
511. Fowlerite, Garnet, Willemite, Calcite and Franklinite, Franklin Furnace, Sussex county.
512. Willemite, Zincite and Franklinite, Franklin Furnace, Sussex county.
513. Smithsonite, Willemite and Franklinite, Franklin Furnace, Sussex county.
514. Franklinite and Willemite, Franklin Furnace, Sussex county.
515. Calcophanite, Stirling Hill, Sussex county.
516. Zincite and Willemite, Franklin Furnace, Sussex county.
Two specimens.

517. **Zincite**, Stirling Hill, Sussex county.
Three specimens, two of which are of rare quality.
- 517A. **Zincite and Calcite**, Stirling Hill, Sussex county.
518. **Garnet**, Stirling Hill, Sussex county.
One of the largest crystals of Garnet ever found. It is loaned to this collection by the Passaic Zinc Company.
519. **Asbestos**, Roseville, Sussex county.
Three specimens.
520. **Roepperite**, Stirling Hill, Sussex county.
521. **Amphibole**, Stirling Hill, Sussex county.
522. **Dysluite and Jeffersonite**, Stirling Hill, Sussex county.
- 522A. **Jeffersonite**, Stirling Hill, Sussex county.
523. **Sapphire**, Newton, Sussex county.
Specimens 520, 521, 522, 522A and 523 are loaned by Fred'k A. Canfield, M. E., of Dover.
524. **Barite**, Newton, Sussex county.
525. **Franklinite, Willemite and Zincite**, Stirling Hill, Sussex county.
Two specimens.
527. **Serpentine and Chrysotile**, Wynokie, Passaic county.
Two specimens.
528. **Graphite**, Pinkneyville, Sussex county.
529. **Serpentine**, Montville, Morris county.
Five specimens, two of which are composed chiefly of Marmolite.
530. **Calcite**, Bergen Hill, Hudson county.
Twelve specimens.
531. **Calcite and Pyrite**, Bergen Hill, Hudson county.
Three specimens.
532. **Pectolite**, Bergen Hill, Hudson county.
Nine specimens.
535. **Datolite**, Bergen Hill, Hudson county.
Six specimens.
535. **White Quartz**, Bergen Hill, Hudson county.
536. **Datolite and Natrolite**, Bergen Hill, Hudson county.
Three specimens.
537. **Apophyllite**, Bergen Hill, Hudson county.
Two specimens.
539. **Analcite and Datolite**, Bergen Hill, Hudson county.
Two specimens.
540. **Analcite, Datolite and Apophyllite**, Bergen Hill, Hudson county.

541. Apophyllite and Calcite, Bergen Hill, Hudson county.
Two specimens.
542. Natrolite and Prehnite, Bergen Hill, Hudson county.
543. Prehnite and Pectolite, Bergen Hill, Hudson county.
544. Natrolite, Bergen Hill, Hudson county.
Two specimens.
545. Stilbite, Bergen Hill, Hudson county.
546. Asbestos, Hoboken, Hudson County.
548. Magnesite and Serpentine, Hoboken, Hudson county.
Two specimens.
549. Prehnite and Calcite, Bergen Hill, Hudson county.
550. Native Copper and Cuprite, New Brunswick, Middlesex county.
Two specimens.
551. Malachite, New Brunswick, Middlesex county.
Two specimens.
552. Vivianite, Shrewsbury, Monmouth county.
Twenty-three specimens.
- 553A. Mullicite and Vivianite, Mullica Hill, Gloucester county.
554. Belemnite replaced by Vivianite, Mullica Hill, Gloucester county.
Nine specimens.
564. Willemite, (*Troostite*) Stirling Hill, Sussex county.
565. Barite and Calcite, New Brunswick, Middlesex county.
566. Mullicite, Mullica Hill, Gloucester county.
Four specimens.
567. Fowlerite, Willemite and Franklinite, Franklin Furnace, Sussex county.
Polished block.
568. Tourmaline, Lambertville, Hunterdon county.
703. Magnetite (*Lodestone*), Dickerson mine, Morris county.
Loaned by F. A. Canfield, M. E., of Dover.
954. Mica, Broadway, Warren county.
One large section of a Crystal, in top of the case. The small pieces, in flat case, are found in the bent condition.

In this collection the specimens numbered 501, 504, 506, 507, 508, 509, 511, 513, 516, 517, 522, 525, 551, 552, 564, 565, 567 and 954 are from the Cabinet of Rutgers College, New Brunswick, N. J.

Nos. 520, 521, 522, 522A, 523 and 703 are from the unique and magnificent Canfield collection at Ferromont, near Dover, Morris county, and they are loaned by Frederick A. Canfield, M. E.

The rare and beautiful Minerals from Bergen Hill, Hudson county, were collected by Joseph F. Talson, of Jersey City Heights, and sold by him to the State.

Building Materials.

Building Stone.

600. Gneiss, Wm. Sykes' quarry, one mile east of Franklin Furnace, Sussex county.

601. "Granite," Joseph Brennan's quarry, on lands of M. J. Ryerson, Charlotteburg, Passaic county.

This is properly a Syenite, and it appears as such in the list of rocks of the Azoic Formations, No. 27.

602. Gneiss, M. J. Ryerson's quarry for paving blocks, Bloomingdale, Passaic county.

Also, in Azoic Rocks, No. 23.

603. ——— Beam tract, two miles north of Bloomingdale, Passaic county.

604. ——— Herrick's quarry, on line of Sussex R. R., Byram township, Sussex county.

Also, as 39 of this Catalogue.

605. ——— Aaron Bryan's quarry, near Port Murray,
Warren county.
Duplicate, No. 34, of this Catalogue.
606. ——— D. L. and W. R. R. Co.'s quarry, Dover, Mor-
ris county.
607. Marble, Marble Mountain quarry, near Bel. Del. R. R.,
Warren county.
Duplicate, No. 77, of this Catalogue.
608. ——— ("*Rose Crystal*"), Jenny Jump Mountain, two
miles west of Danville, on the road to Hope, War-
ren county.
Duplicate, No. 84, of this Catalogue.
609. ——— M. N. Appleget's quarry, near Roseville, Sus-
sex county.
Duplicate, No. 90, of this Catalogue.
610. ——— G. W. Rude's quarry, near Hardystonville,
Sussex county.
Also in this collection No. 96.
611. Sandstone, S. T. Scranton's quarry, Danville, Warren
county.
612. ——— Karrsville, Pohatcong Valley, Warren county.
613. Limestone, Col. Babbitt estate, Newton, Sussex county.
Also as No. 175 of this collection.
614. ——— ("*Blue Stone*"), Joseph Brennan's quarry, on
lands of H. Berry, near Deckertown, Sussex county.
615. Sandstone, Quarry of the United Railroads of New
Jersey Company, Prallsville, Hunterdon county.
Four blocks. Donor, Ashbel Welch, Esq., Lambertville.
616. ——— Keeler, Skirm & Co.'s quarry, Greensburg,
Mercer county.
617. "Brown Stone," Belleville, Essex county.
Donor, J. J. Spurr, of Newark.
618. ——— Bloomfield Road quarry, Essex county.
Donor, J. J. Spurr, of Newark.
619. Sandstone (*Drab-Colored*), Martinville, Somerset county.
620. ——— (*Drab-Colored*), Wallace Vail's quarry, two
miles north of Plainfield, Somerset county.

Roofing Slate.

625. Roofing Slate, M. R. Kay's quarry, near Lafayette, Sussex county; — Williams, lessee.

Duplicate in Geological Series, No. 204.

626. ——— Anderson's quarry, Newton, Sussex county.

Duplicate in Geological Series 202.

627. ——— Boyer's quarry, Sarapta, three miles northeast of Belvidere, Warren county.

628. ——— Delaware Water Gap quarry, Howe & Evans, Delaware Water Gap, Warren county.

Duplicate in Geological Series, No. 200.

These specimens of roofing slate represent all the quarries which have been worked during the past year. There are a few other small quarries, where a small amount of slate has been obtained.

Flagging Stone and Paving Stone.

Specimens of the rocks used for flagging are included in the rocks of the Geological Series, as follows: Nos. 200 and 206 of the Hudson River Slate, and 260 and 261 of the Triassic Period; and those for paving as No. 23 of the Gneissic, and Nos. 273, 279 and 280 of the Trappean rocks.

Lime and Cement.

631. Lime, White Rock Lime and Cement Co., McAfee Valley, Sussex county.

This Lime is made from white crystalline limestone, and is almost entirely free from magnesia.

632. ——— Wallkill Cement and Lime Co., Hamburg, Sussex county.

Made from blue magnesian limestone.

- 632A. Cement, Wallkill Cement and Lime Co., Hamburg, Sussex county.

633. Lime, Charles W. Cope's kilns, Carpenterville, Warren county.

Made from blue magnesian limestone. This specimen may be considered as representative of most of the lime burned in the State—using the common blue limestone, in which the lime and magnesia stand in the same ratio as in dolomite.

634. ——— Sandford Nearpass' kilns, Montague township, Carpenter's Point, Sussex county.

Made from the blue limestone of the LOWER HELDERBERG EPOCH. It is not magnesian.

635. ——— Barber's kilns, Mannington township, Salem county.

Made from the yellow limestone of the MIDDLE MARL BED.

636. ——— Outcalt & DeHart, New Brunswick.

Made from oyster shells.

Magnetic Iron Ores.

These ores are all in the Azoic Formations, and occur in beds, interposed conformably between the layers of the Gneiss rocks. They sometimes extend for a considerable distance, but they are not continuous like the rocks themselves; thinning out to nothing at their edges, and in many cases descending beneath the surface in long folds or rolls,

to an unknown depth. The mines have long been worked, and most of the ore is carried to furnaces near the coal mines in Pennsylvania. There are sixteen blast furnaces in the State, all of which are largely run upon this ore.

The mines now opened number nearly 200, and are capable of supplying 1,000,000 tons of ore annually. The ores are rich, and being near the great markets of the country, they find a ready sale. They vary in purity, some containing a little phosphorus, others sulphur, while others are almost entirely free from these impurities. Many of the ores in the north-west, or Pequest Belt, contain oxide of manganese, and are in demand for making Bessemer steel.

The manufacture of iron was begun by Lewis Morris, in Monmouth county, as early as 1682. Forges for working the magnetic ore of Morris county into bar iron, were built at Whippany about 1710. The blast furnace at Oxford was built in 1742; and iron has been a staple product of New Jersey from those early days. The annual product, however, has been subject to great variations, with the business of the country, the improvements in methods of manufacture, and the convenience of locations for cheap transportation, abundant supplies, and ready markets.

The specimens in the collection fairly represent the mines of the State,—though it has not been possible, at this time, to get good samples of ore from all of them.

[Those marked thus* were not on exhibition, owing to want of space.]

Mines of the Ramapo Belt.

- *640. Iron Ore, Bernardsville, Somerset county.
- *641. ——— Janes' mine, Somerset county.
- 642. ——— Connet mine, Water street, Mendham township, Morris county.
- *643. ——— Taylor mine, Montville township, Morris county.

-
- *644. Iron Ore, Cole farm, Montville township, Morris county.
 - *645. ——— Kahart mine, Pequannock township, Morris county.
 - *646. ——— Lanagan mine, Pequannock township, Morris county.
 - *647. ——— De Bow mine, Pequannock township, Morris county.
 - 648. ——— Jackson, or Pompton mine, near Pompton, Morris county.
 - *649. ——— Ryerson's De Bow mine, near Pompton, Morris county.
 - *650. ——— Beam tract, two miles north of Bloomingdale, Passaic county.
 - 651. ——— Brown mine, Wynokie, Passaic county.
 - 652. ——— Kanouse mine, Wynokie, Passaic county.
 - *653. ——— Butler mine, Ramapo mountain, Passaic county.

Mines of the Passaic Belt.

- 654. Iron Ore, Large's mine, High Bridge, Hunterdon county.
- 654A. ——— Large's mine, High Bridge, Hunterdon county.
- 655. ——— High Bridge mines, High Bridge, Hunterdon county.
- 655A. ——— High Bridge mines, High Bridge, Hunterdon county.

This old and well-known mine is now worked by the Thomas Iron Company. The ore is sent to Hokendauqua, Pennsylvania.

- *656. ——— Old Furnace mine, Hunterdon county.
- *657. ——— Cokesburgh mine, Hunterdon county.
- *658. ——— Fox Hill mine, Hunterdon county.
- *659. ——— Pottersville openings, Hunterdon county.

- *660. **Iron Ore**, Bartles' openings, near Pottersville, Hunterdon county.
- *661. ——— Pottersville mine, (northeast) Chester township, Morris county.
- *662. ——— Rariek Farm mine, Chester township, Morris county.
- *663. ——— Pitney Farm mine, Chester township, Morris county.
- *664. ——— Hardin Farm mine, Chester township, Morris county.
- *665. ——— Budd & Woodhull mines, Chester township, Morris county.
- *666. ——— Topping Farm mine, Chester township, Morris county.
667. ——— Samson or Skellenger mine, Chester, Morris county.
- *668. ——— Chester hotel property mine, Chester, Morris county.
- *669. ——— Collis Farm mine, Chester, Morris county.
- *670. ——— Creamer Farm mine, Chester, Morris county.
- *671. ——— Swayze mine, Chester, Morris county.
672. ——— Open cut, east of Black river, Hacklebarney mine, two miles southwest of Chester, Morris county.
- 672A. ——— Coal-house cut or opening, Hacklebarney mine, two miles southwest of Chester, Morris county.
- Large block of ore under the case, Chester Iron Company.
- 672B. ——— Coal-house vein on hill, Hacklebarney mine, two miles southwest of Chester, Morris county.
- 672c. ——— Coal-house vein on hill, Hacklebarney mine, two miles southwest of Chester, Morris county.
- 672D. ——— Open cut, foot-wall vein on hill, Hacklebarney mine, two miles southwest of Chester, Morris county.

These represent the extensive open workings of this old *mine*, now owned and worked by the Chester Iron Company.

- *673. Iron Ore, Gulick mine, near Chester, Morris county.
 *674. ——— Creager mine, near Chester, Morris county.
 675. ——— Hedges mine, one mile southwest of Chester,
 Morris county.

A large vein opened a few years ago, and now worked by the North Jersey Iron Company. This ore, like most of the ore found about Chester, contains some sulphur—in the form of iron pyrite. Roasting in the Taylor Calcining kiln removes nearly all this element, leaving a rich ore which is sufficiently free from phosphorus to be used for Bessemer pig.

- *676. ——— Dickerson Farm mine, Chester, Morris county.
 *677. ——— Creamer Farm mine, Chester, Morris county.
 *678. ——— De Camp mine, Chester, Morris county.
 *679. ——— Leake mine, Chester, Morris county.
 *680. ——— Daniel Horton mine, Chester, Morris county.
 *681. ——— Barnes mine, Chester, Morris county.
 *682. ——— David Horton mine, Randolph township,
 Morris county.
 *683. ——— De Hart mine, Randolph township, Morris county.
 684. ——— Carbon or Dalrymple mine, west stopes 265 feet deep, four miles south of Dover, Morris county.
 684A. ——— Carbon or Dalrymple mine, middle stopes 240 feet deep, four miles south of Dover, Morris county.
 684B. ——— Carbon or Dalrymple mine, northeast stopes 140 feet deep, four miles south of Dover, Morris county.

This ore is mined for the Carbon Iron Company, Parryville, Pennsylvania.

- *685. ——— Trowbridge farm, Randolph township, Morris county.
 *686. ——— Lewis or Herrick mine, Randolph township,
 Morris county.

-
- *687. Iron ore, Combs mine, Randolph township, Morris county.
- *688. ——— Cooper mine, Randolph township, Morris county.
- *689. ——— Sol. Dalrymple mine, Randolph township, Morris county.
- *690. ——— Canfield mine, Ferromont, three miles west of Dover, Morris county.
- 690A. ——— Canfield mine, Ferromont, three miles west of Dover, Morris county.
- 690B. ——— Canfield mine, Ferromont, three miles west of Dover, Morris county.

This mine is owned by the Dickerson Suckasunny Mining Company, and is worked by E. Canfield, for the Port Oram furnace. This furnace has a stack sixty feet high, with boshes sixteen feet diameter.

691. ——— Canfield phosphatic iron mine, Ferromont, Morris county.

This ore, remarkable for its large per centage of granular apatite, occurs in a vein eight feet wide, on the property of the above mentioned company.

- *692. ——— J. D. King mine, Randolph township, Morris county.
- *693. ——— Henderson mine, Randolph township, Morris county.
- *694. ——— Bryant mine, Randolph township, Morris county.
- *695. ——— Connor Foulan mine, Randolph township, Morris county.
- *696. ——— Charles King mine, Randolph township, Morris county.
- *697. ——— King mine, Randolph township, Morris county.
- *698. ——— McFarland mine, Randolph township, Morris county.

699. Iron Ore, Evers mine, three miles southwest of Dover, Morris county.
700. ——— Brotherton mine, three miles southwest of Dover, Morris county.
- 700A. ——— Brotherton mine, three miles southwest of Dover, Morris county.

Surface ore.

- *701. ——— Erb mine, Randolph township, Morris county.
- *702. ——— Scrub Oak mine, Randolph township, Morris county.
- 702½. Regan mine, Ferromont, Morris county.
703. Dickerson mine, Ferromont, three miles west of Dover, Morris county.

Coarse—granular, or “shot ore.” Hanging-wall side of vein, Big mine.

This is one of the oldest and most noted of the magnetic iron ore mines of New Jersey, and it has steadily furnished a large amount of very rich ore. It is the deepest in the State. At present it is owned by the Dickerson Suckasunny Mining Company, and is worked by the Allentown Iron Company. Most of the ore is smelted at their furnaces, Allentown, Pa. The large block in the aisle, between the cases, is from this mine—the gift of the owners and lessees. It weighs about 1,800 lbs. In the case of minerals there is a large and remarkably strong natural magnet (lodestone) from this mine. It is loaned to this collection by Fred. A. Canfield, M. E., of Dover.

- 703A. ——— Slickensides (?) with red oxide of iron, Foot-wall side of vein, Dickerson mine, Ferromont, three miles west of Dover, Morris county.
704. ——— Byram mine, Mine Hill, two miles west of Dover, Morris county.

This specimen contains some granular apatite.

- 704A. ——— Byram (Russell) mine, Mine Hill, two miles west of Dover, Morris county.

- 704b. Iron Ore (with apatite), Byram (Russell) mine, Mine Hill, two miles west of Dover, Morris county.
- 704c. Iron Ore, First, or hanging-wall vein, Byram mine, Mine Hill, two miles west of Dover, Morris county.
- *704d. ——— Third vein or Hard vein, Byram mine, Mine Hill, two miles west of Dover, Morris county.
- *704e. ——— Fourth vein, Byram mine, Mine Hill, two miles west of Dover, Morris county.
- *704f. ——— Fourth vein, Byram mine, Mine Hill, two miles west of Dover, Morris county.

This mine is one of the deepest in the iron district, the slope being over seven hundred feet in length. The Andover Iron Company work the ore in their furnaces at Phillipsburg, Warren county.

[See foot note.]

705. ——— Baker mine, Pennsylvania and New Jersey Mining Company, Mine Hill, two miles west of Dover, Morris county.
- 705A. ——— Shaft No. 1, Baker mine, Pennsylvania and New Jersey Mining Company, Mine Hill, two miles west of Dover, Morris county.
- 705B. ——— Shaft No. 6, Baker mine, Pennsylvania and New Jersey Mining Company, Mine Hill, two miles west of Dover, Morris county.
- 705C. ——— Shaft No. 4, Baker mine, Pennsylvania and New Jersey Mining Company, Mine Hill, two miles west of Dover, Morris county.
- 705D. ——— Shaft No. 1, Baker mine, Pennsylvania and New Jersey Mining Company, Mine Hill, two miles west of Dover, Morris county.

This specimen is remarkable for the large amount of apatite, resembling the Canfield phosphatic iron ore.

- *706. ——— Millen mine, Mine Hill, two miles west of Dover, Morris county.

NOTE.—This Company has three furnaces, whose stacks are fifty-five and forty-two feet high, with eighteen feet boshes. J. C. Kent, Manager.

707. Iron Ore, East drift, main vein, Randolph Hill mine, one-and-a-half miles west of Dover, Morris county.
- 707A. ——— Sink, main vein, Randolph Hill mine, one-and-a-half miles west of Dover, Morris county.
- 707B. ——— Hanging-wall vein, Randolph Hill mine, one-and-a-half miles west of Dover, Morris county.
- This mine is worked by the Crane Iron Company; furnaces at Catasauqua, Pa.
708. ——— Jackson Hill mine, one-and-a-half miles west of Dover, Morris county.
- Surface ore.
- 708A. ——— Jackson Hill mine, one-and-a-half miles west of Dover, Morris county.
709. ——— Sterling mine, Irondale, two miles west of Dover, Morris county.
- 709A. ——— Sterling mine, Irondale, two miles west of Dover, Morris county.
- 709B. ——— Sterling mine, Irondale, two miles west of Dover, Morris county.
- 709C. ——— Sterling mine, Irondale, two miles west of Dover, Morris county.
- 709D. ——— North River mine, Irondale, two miles west of Dover, Morris county.
- 709E. ——— North River mine, Irondale, two miles west of Dover, Morris county.
- *709F. ——— Orchard mine, Port Oram, Morris county.
- The Irondale mines are owned by Conrad Poppenhusen, New York, and are worked under leases.
- *710. ——— Washington Forge mine, Rockaway township, Morris county.
711. ——— East, or Big mine, Mount Pleasant mine, Mount Pleasant, Morris county.
- 711A. ——— West stopes of West mine, Mount Pleasant mine, Mount Pleasant, Morris county.

The Mount Pleasant mine is worked by the Boonton Iron

Company. This mine is of interest to the geologist, because of its numerous short faults or "offsets," which displace the vein, or ore-bed.

[See foot note.]

712. **Iron Ore**, Southeast vein, Baker mine, Mount Pleasant, Morris county.

712A. ——— Northwest vein, Baker mine, Mount Pleasant, Morris county.

This mine has been worked vigorously for several years by the Allentown Iron Company. A map and sections above the case of iron ores, shows the structure and size of the veins.

713. ——— Northeast stopes, southeast vein, Richards mine, Mount Pleasant, Morris county.

713A. ——— Southwest stopes, southeast vein, Richards mine, Mount Pleasant, Morris county.

713B. ——— Northwest vein, Richards mine, Mount Pleasant, Morris county.

This mine is worked by the Thomas Iron Company.

714. ——— Stopes below the tunnel, Allen mine, Rockaway township, Morris county.

714A. ——— Stopes below the tunnel, Allen mine, Rockaway township, Morris county.

714B. ——— Southwest opening on hill, Allen mine, Rockaway township, Morris county.

The ore of this mine is sent to the Andover Iron Company's furnaces at Phillipsburg.

715. ——— Shaft No. 3, Teabo mine, Rockaway township, Morris county.

715A. ——— Shaft No. 2, Teabo mine, Rockaway township, Morris county.

This mine is worked for the Glendon Iron Company; furnaces at Glendon, Pa.

NOTE.—This Company has two furnaces at Boonton, Morris county. Height of stacks, forty-four and sixty feet; diameter of boshes, thirteen-and-a-half and sixteen feet, with large rolling mill and nail works.

716. Iron Ore, Taylor, or Big vein, Mount Hope mines, Mount Hope, Morris county.
- 716A. ——— Teabo vein, Mount Hope mines, Mount Hope, Morris county.
- 716B. ——— Brannin vein, Mount Hope mines, Mount Hope, Morris county.
- 716C. ——— Brannin vein, Mount Hope mines, Hickory Hill, Morris county.
- 716D. ——— Teabo vein, Mount Hope mines, Hickory Hill, Morris county.

The Lackawanna Iron and Coal Company own and work these mines. The workings are very extensive, and the product of the several veins as here opened has amounted to nearly 100,000 tons of ore in one year. The ore goes to Scranton, Pennsylvania.

- *717. ——— Johnson Hill mines, near Port Oram, Morris county.
- *718. ——— Huff mine, near Port Oram, Morris county.
- 718A. ——— Huff mine, near Port Oram, Morris county.
- 718B. ——— Huff mine, near Port Oram, Morris county.

A considerable amount of ore has been raised from this mine in the past few years, for the Port Oram furnace.

- *719. ——— Dolan mine, near Mount Pleasant, Morris county.
720. ——— Swedes mine, one mile east of Dover, Morris county.
- 720A. ——— Swedes mine, one mile east of Dover, Morris county.

The Boonton Iron Company work this mine.

- *721. ——— Sigler mine, Rockaway township, Morris county.
- *722. ——— White Meadow mine, Rockaway township, Morris county.
723. ——— Andover Iron Company, Hibernia mines, Rockaway township, Morris county.

-
- 723A. **Iron Ore**, Andover Iron Company, Hibernia mines, Rockaway township, Morris county.
- 723B. ——— Andover Iron Company, Hibernia mines, Rockaway township Morris county.
- 723C. ——— Andover Iron Company, Hibernia mines, Rockaway township, Morris county.
- 723D. ——— Glendon shaft, 325 feet deep, Glendon Iron Company, Hibernia mines, Rockaway township, Morris county.
- 723E. ——— Glendon shaft, 325 feet deep, Glendon Iron Company, Hibernia mines, Rockaway township, Morris county.
- 723F. ——— Shaft No. 3, 325 feet deep, Glendon Iron Company, Hibernia mines, Rockaway township, Morris county.
- 723G. ——— Shaft No. 4, 275 feet deep, Glendon Iron Company, Hibernia mines, Rockaway township, Morris county.
- 723H. ——— Shaft No. 5, 275 feet deep, Glendon Iron Company, Hibernia mines, Rockaway township, Morris county.
- 723I. ——— Shaft No. 6, 250 feet deep, Glendon Iron Company, Hibernia mines, Rockaway township, Morris county.
- 723J. ——— Bethlehem Iron Company's shaft, No. 2, 250 feet deep, Hibernia mines, Rockaway township, Morris county.
- 723K. ——— Bethlehem Iron Company's shaft, No. 2, 250 feet deep, Hibernia mines, Rockaway township, Morris county.
- 723L. ——— Bethlehem Iron Company's shaft, No. 2, 250 feet deep, Hibernia mines, Rockaway township, Morris county.
- 723M. ——— Bethlehem Iron Company's shaft, No. 4, 250 feet deep, Hibernia mines, Rockaway township, Morris county.

723N. **Iron Ore**, Bethlehem Iron Company's shaft, No. 4, 250 feet deep, Hibernia mines, Rockaway township, Morris county.

The Hibernia mines consist of shafts and workings, all on one long and remarkably constant vein of ore. The Andover Iron Company works the southwest end of this line, the Glendon Iron Company has the middle, and the Bethlehem Iron Company the northeast end of the range. The annual product of the three companies has reached, in the aggregate, 80,000 tons of ore.

724. ——— Beach Glen mine, Rockaway township, Morris county.

724A. ——— Beach Glen mine, Rockaway township, Morris county.

724B. ——— Beach Glen mine, Rockaway township, Morris county.

Worked by the Boonton Iron Company.

*725. ——— Tichenor's openings, Rockaway township, Morris county.

*726. ——— Righter mine, Rockaway township, Morris county.

*727. ——— Meriden mine, Rockaway township, Morris county.

*728. ——— Splitrock, or Cobb mine, Rockaway township, Morris county.

729. ——— Splitrock Pond mine, Rockaway township, Morris county.

*730. ——— Greenville mine, Rockaway township, Morris county.

731. ——— Denmark mine, Denmark Morris county.

*732. ——— Pardee mine, Rockaway township, Morris county.

733. ——— Green Pond mines, south lease, Rockaway township, Morris county.

- 733A. Iron Ore, Green Pond mines, big opening, Rockaway township, Morris county.
- 733B. ——— Big opening, No. 1 of middle lease, Green Pond mines, Rockaway township, Morris county.
- 733C. ——— No. 2, of north lease, Green Pond mines, Rockaway township, Morris county.
- 733D. ——— No. 6, of north lease, Green Pond mines, Rockaway township, Morris county.

These mines have yielded a large amount of ore during the past year, and most of it has been used in the manufacture of Bessemer steel, at the Pennsylvania Steel Works, near Harrisburg, Pa.

- *734. ——— Bancroft shaft, Rockaway township, Morris county.
- *735. ——— Charlottenburg mines, Rockaway township, Morris county.
- *735A. ——— Charlottenburg mines, Rockaway township, Morris county.
- 735B. ——— Ryerson's east shaft, Charlottenburg mines, Rockaway township, Morris county.
736. ——— DeCamp mine, Rockaway Valley, Morris county.
- 736A. ——— Field vein, Reba mine, Rockaway Valley, Morris county.
- 736B. ——— Field vein, Reba mine, Rockaway Valley, Morris county.
- *737. ——— Botts' farm, Pequannock township, Morris county.
- *738. ——— Decker farm, Pequannock township, Morris county.
- *739. ——— Gould's farm, Pequannock township, Morris county.
- *740. ——— Ryerson's tract, "Pike's Peak," Pequannock township, Morris county.

- *741. Iron Ore, Wynokie mines, Pompton township, Passaic county.
- *742. ——— Tellington mine, Pompton township, Passaic county.
- *743. ——— Rheinsmith mine, Pompton township, Passaic county.
- *744. ——— Monk's mine, Pompton township, Passaic county.
- *745. ——— Board mine, Pompton township, Passaic county.

746. ——— Cannon mine, Ringwood, Passaic county.

This is a coarse granular, or "shot ore." Large specimen in top of case.

746A. ——— Cannon mine, Ringwood, Passaic county.

746B. ——— Cannon mine, Ringwood, Passaic county.

This specimen is nearly all sesquioxide of iron, and is not magnetic.

746C. ——— Hard mine, Ringwood, Passaic county.

746D. ——— Hard mine, Ringwood, Passaic county.

746E. ——— Miller mine, Ringwood, Passaic county.

746F. ——— Blue mine, Ringwood, Passaic county.

746G. ——— Old Blue mine, Ringwood, Passaic county.

746H. ——— Cooper mine, Ringwood, Passaic county.

746I. ——— Hope mine, Ringwood, Passaic county.

The Ringwood mines were opened and worked some time before the Revolution. They are now the property of Cooper, Hewitt & Co., and their ores are used at the furnaces at Ringwood, Passaic county, and at Durham, Pa., and selected Cannon mine ore is sold for puddling furnace lining. The veins are remarkable for their size and the superior quality of the ore. The total product of these mines to the present time is estimated at about 600,000 tons.

*746J. ——— Ward mine, Ringwood tract, Passaic county.

[See foot note.]

NOTE.—Ringwood furnaces, at Ringwood, Passaic county. Cooper, Hewitt & Co. Two furnaces—45 and 65 feet high; 13 and 16 feet boshes. Formerly used charcoal.

Mines of the Musconetcong Belt.

747. Iron Ore, Hager mine, Bethlehem township, Hunterdon county.
A weathered specimen which has lost its sulphur.
748. ——— Bloom's mine, Little York, Hunterdon county.
749. ——— Brodrick & Co.'s mine, one mile west of Bethlehem, Hunterdon county.
- 749A. ——— Brodrick & Co.'s mine, one mile west of Bethlehem, Hunterdon county.
- 749B. ——— Brodrick & Co.'s mine, one mile west of Bethlehem, Hunterdon county.
750. ——— Harris mine, one mile west of Bethlehem, Hunterdon county.
751. ——— Bethlehem mine, east of Bethlehem, Hunterdon county.
- *752. ——— Knight & Hartpence shaft, Bethlehem, Hunterdon county.
753. ——— Church mine, Van Syckles, Bethlehem township, Hunterdon county.
- This mine is owned and worked by Cooper, Hewitt & Co. The ore goes to the Durham furnace. It contains a large per centage of titanitic acid, and is reported to contain about 0.3 per cent. of vanadic acid.
754. ——— Miller farm, one mile southwest of Glen Gardner, Hunterdon county.
755. ——— Fritt's farm, White Hall, Hunterdon county.
756. ——— White Hall mine, (east,) Hunterdon county.
757. ——— Banghart's mine, near Glen Gardner, Hunterdon county.
- *758. ——— Hunt, or Pidcock's mine, Schooley's Mountain, Hunterdon county.
- *759. ——— Pleasant Grove mine, Schooley's Mountain, Morris county.

- *760. Iron Ore, William Hann farm, Schooley's Mountain, Morris county.
- *761. ——— Stoutenburgh mine, Schooley's Mountain, Morris county.
- *762. ——— Naughtright mine, near Naughtrightville, Morris county.
- *763. ——— Sharp's mine, Schooley's Mountain, Morris county.
- *764. ——— Rarick farm, Schooley's Mountain, Morris county.
- *765. ——— Cook & McAuley shaft, Schooley's Mountain, Morris county.
- *765A. ——— Hopler farm, Bartleyville, Morris county.
767. ——— A. L. Solomon's mine, Mount Olive, Morris county.
- 767A. ——— A. L. Solomon's mine, Mount Olive, Morris county.
- Ore near surface.
768. ——— J. Drake's mine, Mount Olive, Morris county.
- 768A. ——— J. Drake's mine, Mount Olive, Morris county.
769. ——— Fisher's mine, Beatyestown, Morris county.
- 769A. ——— Fisher's mine, Beatyestown, Morris county.
- 769B. ——— Fisher's mine, Beatyestown, Morris county.
- 769C. ——— Fisher's mine, Beatyestown, Morris county.
- This specimen consists almost exclusively of sesquioxide of iron.
- *770. ——— Dickinson mine, Schooley's Mountain, Morris county.
- *771. ——— Marsh mine, Schooley's Mountain, Morris county.
- *772. ——— Smith mine, Schooley's Mountain, Morris county.
- *773. ——— Warne & Shouse tunnel, Schooley's Mountain, Morris county.

774. Iron Ore, Cramer mine, Schooley's Mountain, Morris county.
- *775. ——— Lanning farm, near Oxford Furnace, Warren county.
- *776. ——— Chapin and Lommasson mine, near Oxford Furnace, Warren county.
777. ——— New mine, Oxford Furnace, Warren county.
- 777A. ——— Car-wheel vein, Oxford Furnace, Warren county,
- 777B. ——— Staley vein, Oxford Furnace, Warren county.
- 777C. ——— Harrison vein, Oxford Furnace, Warren county.

Three of these *veins* are now worked, viz: the New, Car-wheel and Staley. The veins are large, and the ore of very superior quality.

[See foot note.]

- *778. ——— Confucius or Creager mine, near Port Murray, Warren county.
- *779. ——— Mitchell mine, near Port Murray, Warren county.
- *780. ——— Johnson's diggings, near Port Murray, Warren county.
781. ——— Egbert Church, or Smith mine, two miles northwest of Port Murray, Warren county.
- *782. ——— Rockport mine, near Rockport, Warren county.
783. ——— Bald Pate mine, two miles northwest of Port Murray, Warren county.
- 783A. ——— Bald Pate mine, two miles northwest of Port Murray, Warren county.
- 783B. ——— Bald Pate mine, northwest of Port Murray, Warren county.

NOTE.—The Oxford Furnace Company own these mines, together with two blast furnaces, rolling mill and nail works. The oldest furnace was erected in 1742, and it was originally worked with charcoal. The furnaces are thirty-six and fifty feet high; nine feet ten inches, and eighteen feet across the boshes. Annual capacity is 15,700 tons, and nearly all this is worked into spikes and nails. A piece of pig iron, bearing the date 1755, is in the upper part of the case. This is, probably, one of the oldest pieces of iron of American manufacture in the country, whose *age* is known.

- *784. Iron Ore, Searle's mine, Port Murray, Warren county.
 *785. ——— Buck's Hill, Hackettstown, Warren county.
 *786. ——— Frase's farm, near Warrentown, Warren county.
 *787. ——— Young farm, near Warrentown, Warren county.
 *788. ——— Pyle's farm, near Warrentown, Warren county.
 *789. ——— Axford farm, near Warrentown, Warren county.
 790. ——— Bryant mine, one mile southeast of Warrentown, Warren county.

Some ore from this mine is in the Geological Series of Azoic rocks. It is quite lean, and is a syenite containing magnetite, rather than an ore. As such it is typical of several other localities of ore and ore-bearing rocks in this belt.

- *791. ——— Excelsior mine, north of Hackettstown, Warren county.
 *792. ——— Eureka mine, north of Hackettstown, Warren county.
 *793. ——— Brookfield, or Waterloo mine, north of Hackettstown, Warren county.

[See foot note.]

794. ——— Gove mine, near Drakesville, Morris county.
 795. ——— Hurd mine, Hurdtown, Morris county.

This is coarse granular ore.

- 795A. ——— Hurd mine, Hurdtown, Morris county.

Fine granular ore.

- 795B. ——— Hurd mine, Hurdtown, Morris county.

Slickensides ore surfaces. Large block in top of case.

- 795c. ——— Hurd mine, Hurdtown, Morris county.

Lean ore and rock, with slickensides.

The Hurd mine is noted for its great length of slope (about 1,000 feet), descending on the *bottom rock* of the *shoot* of ore towards the northeast, at an angle of twenty-two degrees. It yields a large amount of very rich ore, which is

NOTE.—There is a new furnace at Hackettstown, which is now out of blast.

used in the furnaces of the lessees, the Glendon Iron Company, at Glendon, Pa.

Over the case of minerals a map of the surface, with longitudinal and horizontal sections, might be seen. These show the occurrence of ore as opened in this mine.

*796. Iron Ore, Weldon mine, Jefferson township, Morris county.

In this mine there are two parallel *shoots* of ore. Their relative position and size are shown by the map and sections placed above the case of iron ores.

*797. ——— Lower Weldon mine, Jefferson township, Morris county.

*798. ——— Johnson farm, Jefferson township, Morris county.

*799. ——— Elliott mine, May's mountain, Jefferson township, Morris county.

800. ——— Dodge mine, Jefferson township, Morris county.

801. ——— Ford mine, Jefferson township, Morris county.

801A, B, C, D, E. ——— Ford mine, Jefferson township, Morris county.

These *six* specimens represent the variety of ore raised from this mine. The ore is shipped to the Musconetcong Iron Works, at Stanhope, Sussex county.

[See foot note.]

*802. ——— Seofield mine, Jefferson township, Morris county.

*803. ——— Davenport mine, Jefferson township, Morris county.

*804. ——— Boss mine, Jefferson township, Morris county.

*805. ——— Fraser mine, Jefferson township, Morris county.

*806. ——— Goble mine, Jefferson township, Morris county.

NOTE.—Musconetcong Iron Works; two furnaces; height of stack, 55 and 80 feet; diameter of boshes, 17 and 20 feet; ores, magnetic, from Ford, Davenport, Connet and other New Jersey mines, with some hematite from Beattystown, Warren county.

-
- *807. **Iron Ore**, Shongum mine, Jefferson township, Morris county.
808. ——— Cascade, or Smith mine, Byram township, Sussex county.
809. ——— Allis mine, Byram township, Sussex county.
810. ——— French's mines, Byram township, Sussex county.
811. ——— Hude, or Stanhope mine, one mile north of Stanhope, Sussex county.
- 811A. ——— Hude, or Stanhope mine, one mile north of Stanhope, Sussex county.
- 811B. ——— Hude, or Stanhope mine, one mile north of Stanhope, Sussex county.
- 811C. ——— Hude, or Stanhope mine, one mile north of Stanhope, Sussex county.
- The surface and open workings here are yielding a large amount of ore, which is made into Bessemer pig metal.
- *812. ——— Wright's mine, two miles north of Stanhope, Sussex county.
- *813. ——— Silver mine, Byram township, Sussex county.
- *814. ——— Haggerty mine, Byram township, Sussex county.
815. ——— Sickles mine, Sparta township, Sussex county.
- 815A. ——— Sickles mine, Sparta township, Sussex county.
816. ——— Gafney mine, Byram township, Sussex county.
- 816A. ——— Gafney mine, Byram township, Sussex county.
- 816B. ——— Gafney mine, Byram township, Sussex county.
817. ——— Lawrence farm, Byram township, Sussex county.
818. ——— Sherman mine, east of Sparta, Sussex county.
819. ——— Bunker mine, east of Sparta, Sussex county.
820. ——— Musconetcong Iron Works mine, Ogden mines, Sparta township, Sussex county.
- 820A, B, C, D, E. ——— Musconetcong Iron Works mine, Ogden mines, Sparta township, Sussex county.

820F. **Iron Ore**, Allentown Rolling Mill Company's mine, Ogden mines, Sparta township, Sussex county.

820G. ——— Allentown Rolling Mill Company's mine, Ogden mines, Sparta township, Sussex county.

820H. ——— Davenport mine, Ogden mines, Sparta township, Sussex county.

The Ogden mines form one of the most productive groups of mines in the State. Since the building of the Ogden Mine Railroad a large amount of ore has been sent away annually to Stanhope, Allentown, Pa., and other places. One of the specimens, 820E, exhibited, is quite lean. It is shown as typical of the occurrence of magnetite, and not as an ore.

*821. ——— Greer farm and Franklin Iron Company's mines, Hardyston township, Sussex county.

*822. ——— Hopewell Forge mine, Hopewell, Sussex county.

*823. ——— Kimble farm, West Milford township, Passaic county.

*824. ——— Budd and Hunt Tract mine, West Milford township, Passaic county.

*825. ——— Scranton and Rutherford Tract mine, West Milford township, Passaic county.

*826. ——— Jennings and Rutherford line, West Milford township, Passaic county.

827. ——— Canistear mine, Vernon township, Sussex county.

*828. ——— Tracey and Crane farms, Vernon township, Sussex county.

*829. ——— Henderson mine, Vernon township, Sussex county.

*830. ——— Clinton Tract mine, West Milford township, Passaic county.

831. ——— Williams mine, Vernon township, Sussex county.

- 831A. Iron Ore, Williams mine, Vernon township, Sussex county.
- *832. ——— Segur and Wright Lease mine, Vernon township, Sussex county.
- *833. ——— Jacob Hunt farm, Vernon township, Sussex county.
834. ——— Wawayanda mine, Vernon township, Sussex county.

This mine belongs to the Thomas Iron Company. Its ore was formerly used in the Wawayanda Charcoal Furnace, belonging to the same company.

- *835. ——— Green mine, Vernon township, Sussex county.
- *836. ——— Ten Eycke's openings, West Milford, Passaic county.
- *837. ——— E. H. Wright's mine, Vernon township, Sussex county.

Mines of the Pequest Belt.

- *839. Iron Ore, Schuler opening, near Roxburgh, Warren county.
- *840. ——— Roseberry mine, one mile southeast of Belvidere, Warren county.
841. ——— Barton mine, one-half mile south of Oxford, Warren county.
- This mine is worked for the Durham Furnaces.
- *842. ——— Shoemaker's diggings, Near Oxford, Warren county.
- *843. ——— Redell mine, near Oxford, Warren county.
- *844. ——— Little mine, near Oxford, Warren county.
845. ——— Raub farm, one mile northwest of Oxford Furnace, Warren county.
- *847. ——— Pequest mine, two miles north of Oxford Furnace, Warren county.

848. **Iron Ore**, Henry tunnel (Pequest mine), two miles north of Oxford Furnace, Warren county.

*849. ——— Hoit farm, two miles north of Oxford Furnace, Warren county.

The Pequest mine and adjoining Hoit farm have furnished a portion of the stock for the Pequest furnace.

[See foot note.]

850. ——— Smith's mine, near Green's Pond, Hope township, Warren county.

851. ——— Hendershot farm, or Barnes' mine.

852. ——— Kishpaugh mine, two and one-half miles west of Danville, Jenny Jump mountain, Warren county.

This is a comparatively new mine, and is owned and worked by the Crane Iron Company, of Catasauqua, Pennsylvania. A large amount of ore has been taken from it and made into Bessemer steel.

*853. ——— Welch and Inschow lots, Jenny Jump mountain, Warren county.

*854. ——— Stiff farm, Jenny Jump mountain, Warren county.

*855. ——— Potter farm, Jenny Jump mountain, Warren county.

*856. ——— Garrison farm, Jenny Jump mountain, Warren county.

*857. ——— Davis farm, Jenny Jump mountain, Warren county.

*858. ——— Albertson farm, Jenny Jump mountain, Warren county.

*859. ——— Shaw farm, Jenny Jump mountain, Warren county.

860. ——— Howell farm, northeast end of Jenny Jump mountain, Warren county.

NOTE.—This furnace is on the line of the D. L. & W. R. R., two miles north of Oxford Furnace, Warren county. The stack is fifty-eight feet high, and the bosh sixteen feet in diameter. It is not now in blast.

860A. Iron Ore, Howell farm, northeast end of Jenny Jump mountain, Warren county.

860B. ——— Howell farm, northeast end of Jenny Jump mountain, Warren county.

*861. ——— Carroll farm, near Danville, Warren county.

*862. ——— Schaeffer farm, near Warrentown, Warren county.

863. ——— Leslie shaft, Warrentown, Warren county.

Duplicate specimen, as ore-bearing rock, as No. — of this collection.

864. ——— Maring farm, Wight's lease, Warrentown, Warren county.

*865. ——— Haggerty's diggings, near Warrentown, Warren county.

866. ——— Decker farm, Glendon Iron Company, two miles southwest of Andover, Sussex county.

867. ——— Andover mine, Andover, Sussex county.

867A. ——— Andover mine, Andover, Sussex county.

867B. ——— Andover mine, Andover, Sussex county.

This mine has yielded an enormous quantity of superior ore, containing some manganese. It is not now worked.

*868. ——— Sulphur Hill mine, Andover, Sussex county.

*869. ——— McKean farm, Sussex county.

870. ——— Roseville mine, Roseville, Sussex county.

*871. ——— Tar Hill mine, Sussex county.

872. ——— Franklin mines, Hill vein, Franklin Furnace, Sussex county.

872A. ——— Magnetite in Calcite, Franklin mines, Furnace vein, Franklin Furnace, Sussex county.

The ore at Franklin Furnace occurs in beds in the white, crystalline limestone. It is of excellent quality. It was formerly used in the old furnace at this place.

[See foot note.]

NOTE.—The new furnace at Franklin Furnace has a stack sixty-seven feet high, and boshes twenty-three feet in diameter. It is out of blast.

*873. **Iron Ore**, Green's mine, Pochuck mountain, Sussex county.

*874. ——— Bird mine, Pochuck mountain, Sussex county.

The location of the several Magnetic iron ore mines and the openings made for iron ore, and the boundaries of the four belts of Azoic rocks, according to which sub-division the mines are grouped, are shown on the Geological Map of Northern New Jersey, 1874. The mines about Dover, Morris county, are more plainly marked on the "Topographical Map of a group of iron mines near Dover."

Hematite.

880. **Red Hematite**, Mine on Marble mountain, Warren county.

881. ——— Titman shaft, Bridgeville, Warren county.

882. ——— Andover mine, Andover, Sussex county.

882A. ——— Andover mine, Andover, Sussex county.

Limonite, or Brown Hematite.

884. Brown Hematite, or Limonite, Bird mine, near Clinton Hunterdon county.
- *885. ——— German Valley, Morris county.
- *886. ——— Carpentersville, Warren county.
- *887. ——— Hamlen mine, Greenwich township, Warren, county.
888. ——— Thatcher mine, Stewartsville, Warren county.
- 888A. ——— Thatcher mine, Stewartsville, Warren county.
- 888B. Sand, (*from a Hematite Bomb*)—Thatcher mine, Stewartsville, Warren county.
- This is comparatively a new mine, but very productive of ore of a superior quality. A large amount has been shipped to the Bethlehem Iron Company's works, Bethlehem, Pennsylvania.
- *889. Brown Hematite—New Village, Warren county.
- *890. ——— Broadway, Warren county.
891. ——— Shield's farm, Beatyestown, Warren county.
- 891A. ——— Shield's farm, Beatyestown, Warren county.
- 891B. ——— Shield's farm, Beatyestown, Warren county.
- From pits of the Musconetcong Iron works.
- 891C. Shield's farm, Beatyestown, Warren county.
- 891D. Shield's farm, Beatyestown, Warren county.
- Pits of the Thomas Iron Company.
- 891E. Spathic Iron Ore—Shield's farm, Thomas Iron Company's pits, Beatyestown, Warren county.
- 891F. ——— with Limonite—Shield's farm, Thomas Iron Company's pits, Beatyestown, Warren county.

On this Shield's farm there are three companies raising ore, viz: the Thomas Iron Company, the Musconetcong Iron

Works, and the Boonton Iron Company. The Musconetcong Iron Works at Stanhope get the most of the aggregate amount raised on this property.

*892. **Brown Hematite**—Shiloh, Warren county.

893. **Siderite, or Spathic Iron Ore**—Cedar Hill mine, McAfee Valley, Sussex county.

894. **Brown Hematite**—Pochuck mine, McAfee Valley, Sussex county.

894A. ——— Pochuck mine, McAfee Valley, Sussex county.

894B. ——— Pochuck mine, McAfee Valley, Sussex county.

The hematite here occurs in a large bed in the gneissic rock, and is opened by subterranean workings, similar to the magnetic iron ore mines of the state. It belongs to the Lackawanna Iron and Coal Company, and it is capable of yielding annually a large amount of rich ores.

895. ——— I. P. Cooley's farm, near Greenwood Lake, Passaic county.

896. **Bog Iron Ore, Limonite**, Near Jacksonville, Middlesex county.

*897. ——— Atsion, Burlington county.

Zinc Ores.

Ores of zinc are mined at Sterling Hill and Mine Hill, in Sussex county. The maps give a fair idea of the location and structure of the beds of ore. Oxide, and silicate of

zinc, and franklinite are the principal ores. The specimens are a fair exhibit of the ores. Much of it is worked directly into the white oxide, for painters' use; but there is a large quantity used in making spelter of a superior grade. The residuum left after making zinc oxide, contains oxides of iron and manganese, and is used in making spiegel-eisen.

897. Franklinite and Willemite, New Jersey Zinc Company's mines, Franklin Furnace, Sussex county.
898. Franklinite and Zincite, New Jersey Zinc Company's mines, Franklin Furnace, Sussex county.
899. Franklinite and Willemite, New Jersey Zinc Company's mines, Franklin Furnace, Sussex county.
- 899A. Franklinite, Willemite and Smithsonite, New Jersey Zinc Company's mines, Franklin Furnace, Sussex county.
900. Franklinite, Willemite and Zincite, New Jersey Zinc Company's mines, Franklin Furnace, Sussex county.
901. Willemite and Franklinite, with Trap Dike, New Jersey Zinc Company's mine, Franklin Furnace, Sussex county.

One block of ore traversed by two narrow dikes under the case.

902. Franklinite in Limestone, Franklin Furnace, Sussex county.
- 902A. Crystalline Limestone, with Franklinite, Stirling Hill, Sussex county.
903. Franklinite (*massive*), Passaic Zinc Company's mine, Stirling Hill, Sussex county.
904. Willemite, Passaic Zinc Company's mine, Stirling Hill, Sussex county.
905. Willemite and Franklinite, Passaic Zinc Company's mines, Stirling Hill, Sussex county.
- 905A. Franklinite, Willemite and Zincite, Passaic Zinc Company's mine, Stirling Hill, Sussex county.

906. Calamine, Passaic Zinc Company's mine, Stirling Hill, Sussex county.

Several blocks of ore, coated with crystals of calamine, are in the top of case.

The hanging wall and the foot wall of the vein of zinc ore in the Passaic Company's mine, at Sterling Hill, are also in the case, but not numbered.

The gangue rock, which has the form and appearance of calcite, contains a considerable percentage of carbonate of manganese. This causes it to weather to a manganese brown in exposed specimens.

Under the case of zinc ores are two large blocks of ore, one mostly zincite, the other mostly franklinite. These and the calamine in the top of the case are from the mines of the Passaic Zinc Company, Stirling Hill.

907. Zinc Ore (*Sphalerite or Blendé*), P. Raub's farm, near Oxford, Warren county.

In crystalline limestone.

Ores of Copper, Lead and Arsenic.

These ores occur at many localities, but in small quantities only; and there are no mines which are now worked. The copper ores of a few of these localities were exhibited as typical of the modes of occurrence.

910. **Copper Ore**—Schuyler mine, Belleville, Essex county.
911. ——— Near Plainfield, Somerset county.
912. ——— (*Carbonates*)—New Brunswick, Middlesex county.
913. ——— Griggstown, Somerset county.
*914. ——— Flemington mine, Hunterdon county.
923. ——— Pahaquarry Copper mine, Pahaquarry, Warren county.
924. **Lead Ore, (*Galenite*)**—Sussex Lead mine, Howellsville, Sussex county.
925. **Arsenical Iron Ore, (*Arsenopyrite*)**—Mine, northeast end of Jenny Jump mountain, Warren county.
-

Clays.

Nearly all of the Fire and Potters' clays of the State are included in the list of specimens from the Cretaceous Formation, Nos. 290 to 353 of this catalogue. The remaining unclassified specimens are here appended.

926. **Fire Clay, (*washed*)**—James Conrad's pits, Conrad, Gloucester county.
927. ——— (*crude*)—James Conrad's pits, Conrad, Gloucester county.

-
928. Pipe Clay—Union Clay Co.'s pits, Woodmansie, Burlington county.
929. ——— Townsend's pits, Wheatland Station, (N. J. S. R. R.,) Burlington county.
930. Clay—Joseph Nugent's farm, near Tuckerton, Burlington county.
931. ——— J. F. Cordery's lands, Absecon, Atlantic county.
-

Glass Sand.

The Glass Sand localities are nearly all in the southern part of the State. They supply the material for making window glass, hollow ware, &c. One-third of the window glass, and a large part of the hollow ware manufactured in the United States, is made at the several works in this State.

935. Glass Sand—Pits of Thomas Richards, Jr., Jackson, Camden county.
936. ——— (*coarse*)—Hon. Andrew K. Hay's pits, Winslow, Camden county.
- 936A. ——— (*fine*)—Hon. Andrew K. Hay's pits, Winslow, Camden county.
937. Hurf & Bro.'s pits, near Williamstown, Gloucester county.

-
938. **Glass Sand**, Pits along the Maurice river, South Vine-land, Cumberland county.
From Whitall, Tatum & Co., of Millville.
939. ——— Pits along Maurice river, three miles south of Millville, Cumberland county.
940. **Sand**, (*for glass*)—Dr. T. T. Price's lands, Tuckerton, Burlington county.
-

Sand for Castings, Moulding, &c.

941. **Sand**, Boonton Iron Company's pits, Flanders, Morris county.
942. ——— Carey's pits, Flanders, Morris county.
941 and 942 belong in the rocks of the Potsdam Period.
943. **Moulding Sand**, Otto Ernst's farm, Chesquakes, South Amboy township, Middlesex county.
944. ——— A. Hall & Son's pits, Woodbridge, Middlesex county.
Overlying the fire clay.
945. **Foundry Sand**, Whitehead Bro.'s pits, two miles west of Burt's Creek, South Amboy township, Middlesex county.
- 945A. **Micaceous Sand** ("*Clay Kaolin*"), Whitehead Bro.'s pits, two miles west of Burts Creek, South Amboy township, Middlesex county.

-
- 945B. Micaceous Sand, ("Blue Kaolin"), Whitehead Bros.' clay pits, South Amboy township, Middlesex county.
946. Fire Sand, W. N. Weidener's pits, Perth Amboy, Middlesex county.
947. ——— R. N. & H. Valentine's pits, Sand Hills, Raritan township, Middlesex county.
948. ——— M. Compton's pits, southeast of Bonhamtown, Middlesex county.
949. Sand (*coarse*), M. Compton's pits, southeast of Bonhamtown, Middlesex county.
- 949A. ——— (*fine*), M. Compton's pits, southeast of Bonhamtown, Middlesex county.
-

Miscellaneous Products.

950. Barite (*Sulphate of Baryta*), Anderson farm, three miles west of Newton, Sussex county.
951. ——— Hopewell, Mercer county.
952. Graphite (*Black Lead*), William Current's farm, near Ogdensburg, Sussex county.
- 952A. ——— Engellmann's farm, near Peapack, Morris county.
953. Steatite, Marble mountain, Warren county.
954. Mica, Broadway, Warren county.

955. Manganese Ore (*Pyrolusite and Braunite*), Merrill's mine, one mile southeast of Clinton, Hunterdon county.
956. ——— Henry Radley's pits, Lebanon, Hunterdon county.
Used as paint.
957. Molybdenite, Hude or Stanhope mine, Stanhope, Sussex county.
- 957A. Molybdic Ochre, Hude or Stanhope mine, Stanhope, Sussex county.
958. Peat, Mead's Basin, Morris county.
Prepared according to the Elsberg process.
959. Peaty Earth ("*Blue Earth*"), J. R. Perrine's farm, Manalapan, Monmouth county.
Containing phosphate of iron.
-

Metallurgical Products.

Zinc.

- Spelter, New Jersey Zinc Company's works, Newark, Essex county.
- Spelter Statuette, New Jersey Zinc Company's works, Newark, Essex county.
Loaned by the N. J. Zinc Company.
- Oxide of Zinc, New Jersey Zinc Company's works, Newark, Essex county.

Spiegel-Eisen, New Jersey Zinc Company's works, Newark, Essex county.

Made from residuum of zinc furnaces.

Spelter, Passaic Zinc Company's works, Jersey City, Hudson county.

Oxide of Zinc, Passaic Zinc Company's works, Jersey City, Hudson county.

Iron.

Bloom of Iron, Made at the Shippenport forge, Morris county, from Barnes' mine ore.

Donor, Edward Canfield.

Cast Iron, (*Spiegel-eisen*)—Made from Andover mine ore, at Sussex Iron Company's furnace, Stanhope, Sussex county, 1855.

Malleable Iron, Made from Andover mine ore, at Sussex Iron Company's furnace, Stanhope, Sussex county, 1855.

Pig Iron, Oxford Furnace, Warren county.

Made in 1755, in the old charcoal furnace.

Loaned by S. T. Scranton, Esq., President of the Oxford Iron Company.

——— No. 1, Oxford Iron Company, Oxford Furnace, Warren county.

——— No. 2, Oxford Iron Company, Oxford Furnace, Warren county.

Pig Iron No. 1, (*Forge*)—Oxford Iron Company, Oxford Furnace, Warren county.

——— (*White*)—Oxford Iron Company, Oxford Furnace, Warren county.

——— (*Mottled*)—Oxford Iron Company, Oxford Furnace, Warren county.

Merchant Bar Iron—Oxford Iron Company, Oxford Furnace, Warren county.

R. R. Splice Bar Bolts—Oxford Iron Company, Oxford Furnace, Warren county.

Ship Spikes—Oxford Iron Company, Oxford Furnace, Warren county.

R. R. Spikes, (*bent cold*)—Oxford Iron Company, Oxford Furnace, Warren county.

Nails, (*bent cold*)—Oxford Iron Company, Oxford Furnace, Warren county.

Pig Iron, (*samples*)—Andover Iron Company, Phillipsburg, Warren county. From J. C. Kent, manager.

Pig Iron, No. 1, (*Foundry*)—Port Oram Iron works, Port Oram, Morris county.

——— No. 2, (*Foundry*)—Port Oram Iron works, Port Oram, Morris county.

——— No. 2, Common, (*Foundry*)—Port Oram Iron works, Port Oram, Morris county.

——— (*Grey Forge*)—Port Oram Iron works, Port Oram, Morris county.

——— (*Grey Mottled*)—Port Oram Iron works, Port Oram, Morris county.

——— (*Hard Mottled*)—Port Oram Iron works, Port Oram, Morris county.

——— (*White*)—Port Oram Iron works, Port Oram, Morris county.

These specimens, from the Port Oram Iron works, were made from Morris county magnetic ore exclusively. They were donated by E. S. Moffatt, M. E., superintendent.

Manufactures.

Fire Bricks, Bricks, Pottery, Tile, Glassware.

- Fire Brick, No. 1 and No. 2**, Salamander works, William Poillon, president, Woodbridge, Middlesex county.
- **No. 1 and No. 2**, National Fire Brick works, Chas. Anness & Son, Woodbridge, Middlesex county.
- **Extra, No. 1 and No. 2**, M. D. Valentine & Brother, Woodbridge, Middlesex county.
- **No. 1 and No. 2**, Wm. H. Berry & Co.'s works, Woodbridge, Middlesex county.
- **No. 1, No. 2, and Silica Brick**, A. Hall & Sons, Perth Amboy, Middlesex county.
- **[A]**, Watson Fire Brick manufactory, John R. Watson, Perth Amboy, Middlesex county.
- **No. 1 and No. 2**, Crossman Clay and Manufacturing Company, Woodbridge township, Middlesex county.
- **No. 1 and No. 2**, Adamantine Brick works, Sayre & Fisher, Sayreville, on the Raritan river, South Amboy township, Middlesex county.
- **Front Brick, light colored**, A. Hall & Sons, Perth Amboy, Middlesex county.
- Sayre & Fisher, Sayreville, South Amboy township, Middlesex county.
Plain and ornamented.
- Hollow Brick**, C. W. Boynton & Co.'s works, Woodbridge Neck, Middlesex county.
- Land Tile**, C. W. Boynton & Co.'s works, Woodbridge Neck, Middlesex county.
- Flower Pots**, George Such, South Amboy, Middlesex county.
Made of clay (natural color).

Fire Brick, Conrad, Gloucester county.

These bricks represent nearly all of the fire-brick works in the State, and fairly represent the quality of brick made from New Jersey clays. In addition to that used in these works, a large amount of fire clay is sent to works in New York and Pennsylvania.

C. C. Ware, Glasgow Potteries, Trenton, Mercer county, John Moses & Co.

Made of Woodbridge clay.

Alum.

Made from Woodbridge clay.

From Hon. Charles A. Campbell, of Woodbridge.

Glass and Glassware, Whitall, Tatum & Co., Millville, Cumberland county.

——— **Bodine & Son's works**, Tansborough, Camden county.

Fossils.

Characteristic fossils of the Trenton, Hudson, Lower Helderberg, Oriskany, Cauda Galli, Onondaga, Corniferous and Marcellus periods are found in the State, as also of the Triassic, Cretaceous and Tertiary periods, but no attempt has been made to exhibit full series of them. The Cretaceous and Eocene are notably rich in organic remains.

Maps.

Geodetic Map.

1. **Geodetic Map**, Showing the extension of the United States Coast Survey triangulation, as done for States conducting a geological or topographical survey.

Geological Maps.

2. **Geological Map of New Jersey**, On a scale of two miles to one inch.
3. ——— of the **Azoic and Paleozoic Regions**, On a scale of two miles to an inch.
4. ——— of the **Triassic Region**, Scale, two miles to one inch.
5. ——— of the **Cretaceous formation**, Scale two miles to one inch.
6. ——— of the **Tertiary and Recent Formations**, On a scale of two miles to one inch.
7. ——— of **Northern New Jersey**, Showing the **Azoic Formation** in characteristic belts, printed in colors. Scale, two miles to one inch.

Topographical Maps.

8. **Topographical Map of a Group of Iron Mines**, Near Dover, Morris county, on a scale of three inches to a mile.
9. ——— of a **Group of Iron Mines**, Near Dover. Scale, six inches to a mile.

10. **Topographical Map of Jenny Jump Mountain and the country about Oxford Furnace.** Scale, six inches to a mile.
11. ——— of Mine Hill and the zinc mines. Scale, fifty feet to one inch.
12. ——— of the Clay District of Middlesex county. Scale, three inches to a mile.
13. ——— of Zinc Mines at Stirling Hill and Mine Hill, Sussex county. Scale, eight inches to one mile.
14. ——— of the Oxford Iron Mines. Scale, eight inches to one mile.
15. ——— of Ringwood Iron Mines. Scale, eight inches to one mile.

Mine Maps.

16. **Mine Map of the Baker Mine, Near Dover, Morris county** with vertical and horizontal sections. Scale, 100 feet to one inch.
17. ——— of the Weldon Iron Mine, in Jefferson township, Morris county, with vertical and horizontal sections. Scale, 50 feet to one inch.
18. ——— of the Hurd Iron Mine, Hurdtown, Morris county, with vertical and horizontal sections. Scale, 100 feet to one inch.

Drainage Maps.

19. **Drainage Map of the Passaic River, from Little Falls to Chatham, with profile.**
20. ——— of the Walkkill, through the Drowned lands, with a profile.
22. ——— of the Tide Marshes at the mouths of the Passaic and Hackensack rivers and on Newark Bay.
23. ——— of the Tide Marshes on Delaware river and bay, near the mouth of Salem creek.

Columnar Section, showing the order of succession in the Geological Series of New Jersey.

Mine Model.

Model of the Zinc Vein and Mines at Mine Hill, Franklin Furnace, Sussex county.

PUBLICATIONS

OF THE

Geological Survey of New Jersey.

Geology of New Jersey, for 1868, 899 pp. large octavo, 108 photolithographic engravings in wood cuts, and portfolio of geological maps.

[See foot note.]

Annual Report of the State Geologist of New Jersey, for 1869—
8 vo., 57 pp. and 3 drainage maps.

——— for 1870, 75 pp. and 1 drainage map, with profiles.

——— for 1871, 46 pp. and 1 drainage map, with profiles.

——— for 1872, 44 pp.

——— for 1873, 128 pp., 3 magnetic survey maps, and map of Northern New Jersey.

NOTE.—Previous to the publication of the Geology of New Jersey in 1868, small annual reports were issued for the years 1864, 1865, 1866 and 1867.

Annual Report of the State Geologist of New Jersey, for 1874, 115 pp. and map of Northern boundary line.
——— for 1875, 41 pp. and triangulation survey map.

NOTE.

It is but just to remark, that whilst most of the specimens have been collected by members of the Geological Survey, the securing them has been largely due to information and assistance furnished by intelligent and liberal citizens in all parts of the State.

CATALOGUE
OF THE
EDUCATIONAL EXHIBIT OF NEW JERSEY,
South Gallery, Main Building.

Public Schools.

Work Exhibited.

NORMAL SCHOOL.

(1.) *In Volumes:*

One volume of Drawings, containing forty-eight specimens, including drawings from the flat, drawings from the round and original designs.

One volume of Maps, containing forty-two specimens.

One volume of Mathematics, containing twenty-two specimens.

One volume of Analyses, containing twenty-two specimens.

One volume of Penmanship, containing sixty-nine specimens.

One volume of Spelling, containing thirteen specimens.

Total number of volumes, six.

Total number of specimens, two hundred and twenty-one.

- (2.) *In Frames :*
 Four Maps, fourteen Drawings, and two specimens of Penmanship.
- (3.) *Miscellaneous :*
 Three Plant Analyses, representing class work in the description of Plants.
 Ten Herbaria, each containing about fifty species of Plants, collected, named and pressed by the Pupils in their class work.
 Fifty Chemical Preparations, made, put up and named by the Pupils.

MODEL SCHOOL.

- (1.) *In Volumes :*
 One volume of Drawings, containing forty specimens.
 One volume of Maps, containing fifty specimens.
 One volume of Mathematics, containing twenty-two specimens.
 One volume of Penmanship, containing forty-four specimens.
 One volume of Spelling, containing eighteen specimens.
 Total number of volumes, five.
 Total number of specimens, one hundred and seventy.

FARNUM PREPARATORY SCHOOL.

- (1.) *In Volumes :*
 One volume of Drawings, containing twenty-eight specimens of original designs.
 One volume of Maps, containing twelve specimens.

One volume of Mathematics, containing fourteen specimens.

One volume of Penmanship, containing nineteen specimens.

One volume of Analysis, containing eighteen specimens.

One volume of Composition, containing eighteen specimens.

Total number of volumes, six.

Total number of specimens, one hundred and nine.

ATLANTIC COUNTY.

County Superintendent—George B. Wight.

City Superintendent of Atlantic City—S. R. Morse.

(1.) *In Volumes:*

One volume of Drawings, containing forty-two specimens.

Two volumes of Maps, containing one hundred and ten specimens.

One volume of Mathematics, containing thirty-three specimens.

One volume of Analysis, containing twenty-eight specimens.

One volume of Composition, containing five specimens.

One volume of Penmanship, containing thirty-three specimens.

Three volumes of Spelling, containing forty-nine specimens.

Total number of volumes, ten.

Total number of specimens, three hundred.

(2.) *In Frames :*

Three Maps, one Drawing, and one specimen of Penmanship.

(3.) *Miscellaneous :*

Three photographs of School Buildings.

Decennial exhibit of School House Improvements.

History of Schools in Atlantic City.

Number of Ungraded Schools represented, forty.

Number of Graded Schools represented, four.

Number of Schools unrepresented, none.

BERGEN COUNTY.

County Superintendent—John A. Demarest.

(1.) *In Volumes :*

Two volumes of Drawings, containing forty-seven specimens.

One volume of Maps, containing forty-six specimens.

One volume of Mathematics, containing fifty specimens.

One volume of Analysis, containing forty-six specimens.

Two volumes of Composition, containing forty-one specimens.

One volume of Penmanship, containing thirty-five specimens.

Three volumes of Spelling, containing sixty-one specimens.

Two volumes of Primary work, containing one hundred and eighty-two specimens.

One volume of Miscellaneous Work, containing twenty specimens.

Total number of volumes, fourteen.

Total number of specimens, five hundred and twenty-eight.

- (2.) *In Frames :*
Two Maps, two Drawings, one specimen of Pen Lettering, and one specimen of Penmanship.
- (3.) *In Portfolios :*
Nine Drawings, and two plans of School Houses.
- (4.) *Miscellaneous :*
Twenty-five photographs of School Buildings.
Decennial exhibit of School House Improvements.
History of Schools in the County.
Kindergarten work from Carlstadt Public School, consisting of card baskets, wall pockets, slippers, perforated figures, weavings, chains, geometrical forms in worsted, &c.
Number of Ungraded Schools represented, fifty-six.
Number of Graded Schools represented, eight.
Number of Schools unrepresented, none.

BURLINGTON COUNTY.

County Superintendent—Edgar Haas.

- (1.) *In Volumes :*
One volume of Drawings, containing thirty-eight specimens.
Two volumes of Maps, containing one hundred and fifty-seven specimens.
Three volumes of Mathematics, containing ninety-eight specimens.

One volume of Analysis, containing thirty-six specimens.

One volume of Composition, containing twenty-six specimens.

Two volumes of Penmanship, containing ninety-nine specimens.

Eleven volumes of Spelling, containing two hundred and twenty-seven specimens.

One volume of Primary Work, containing one hundred and twenty-eight specimens.

One volume of Miscellaneous Work, containing twenty-four specimens.

Total number of volumes, twenty-three.

Total number of specimens, eight hundred and thirty-three.

(2.) *In Frames :*

Four Maps, two Drawings and two specimens of Penmanship.

(3.) *Miscellaneous :*

Fourteen photographs of School Buildings, and seventeen stereoscopic interior views.

Decennial exhibit of School House improvements.

History of Schools of the County.

Number of Ungraded Schools represented, one hundred and four.

Number of Graded Schools represented, eleven.

Number of Schools unrepresented, twelve.

CAMDEN COUNTY.

County Superintendent—F. R. Brace.

City Superintendent of Camden City—Henry L. Bonsall.

City Superintendent of Gloucester City—F. R. Brace.

(1.) *In Volumes :*

Two volumes of Drawings, containing seventy specimens.

One volume of Maps, containing one hundred and twenty-five specimens.

Two volumes of Mathematics, containing sixty-seven specimens.

Two volumes of Analysis, containing fifteen specimens.

Two volumes of Composition, containing twenty-three specimens.

One volume of Penmanship, containing sixty-eight specimens.

Six volumes of Spelling, containing one hundred and eight specimens.

Three volumes of Primary Work, containing two hundred and forty-nine specimens.

Total number of volumes, nineteen.

Total number of specimens, seven hundred and thirty-four.

(2.) *In Frames :*

Four Maps, one Drawing and three specimens of Penmanship.

(3.) *In Portfolios :*

Two Maps and two Drawings.

(4.) *Miscellaneous :*

Forty-six photographs of School Buildings—exterior and interior views.

Decennial exhibit of School House improvements.

History of Schools of the County.

History of Schools of Camden City.

A Working Pump, by a Pupil.

Number of Ungraded Schools represented, thirty-six.

Number of Graded Schools represented, eighteen.

Number of Schools unrepresented, five.

CAPE MAY COUNTY.

County Superintendent—Maurice Beesley.

(1.) *In Volumes :*

One volume of Drawings, containing forty specimens.

One volume of Maps, containing eighty specimens.

One volume of Mathematics, containing thirty-nine specimens.

One volume of Analysis, containing ten specimens.

One volume of Composition, containing sixteen specimens.

One volume of Penmanship, containing forty specimens.

Two volumes of Spelling, containing twenty-nine specimens.

One volume of Primary Work, containing sixty-seven specimens.

Total number of volumes, nine.

Total number of specimens, three hundred and twenty-one.

(2.) *In Frames :*

Three Maps and one specimen of Penmanship.

(3.) *In Portfolios :*

One Drawing.

(4.) *Miscellaneous :*

Thirteen photographs of School Buildings.

Decennial exhibit of School House Improvements.

History of Schools of the County.

Number of Ungraded Schools represented,
twenty-five.

Number of Graded Schools represented, one.

Number of Schools unrepresented, none.

CUMBERLAND COUNTY.

County Superintendent—R. L. Howell.

City Superintendent of Bridgeton—Dr. R. W. Elmer.

City Superintendent of Millville—J. W. Newlin.

(1.) *In Volumes:*

One volume of Drawings, containing seventy-six specimens.

Four volumes of Maps, containing one hundred and sixty specimens.

One volume of Mathematics, containing fifty specimens.

One volume of Analysis, containing twenty specimens.

Two volumes of Composition, containing forty-eight specimens.

One volume of Penmanship, containing seventy-five specimens.

Seven volumes of Spelling, containing one hundred and thirty-five specimens.

One volume of Primary Work, containing one hundred and eleven specimens.

One volume of Miscellaneous Work, containing twelve specimens.

Total number of volumes, nineteen.

Total number of specimens, six hundred and eighty-seven.

- (2.) *In Frames:*
Six Maps, one Drawing and one specimen of Penmanship.
- (3.) *In Portfolios:*
Three Maps and two Drawings.
- (4.) *Miscellaneous:*
Forty-six photographs of School Buildings, and eight stereoscopic interior views.
Decennial exhibit of School House Improvements.
History of Schools of the County.
Number of Ungraded Schools represented, sixty-two.
Number of Graded Schools represented, nineteen.
Number of Schools unrepresented, eight.

ESSEX COUNTY.

County Superintendent—Charles M. Davis.
City Superintendent of Newark—George B. Sears.
City Superintendent of Orange—Israel H. Gerry.

- (1.) *In Volumes:*
Three volumes of Drawings, containing one hundred and ten specimens.
Four volumes of Maps, containing two hundred specimens.
Six volumes of Mathematics, containing one hundred and eighty-six specimens.
Three volumes of Analysis, containing fifty-four specimens.
Three volumes of Composition, containing one hundred and four specimens.

Three volumes of Penmanship, containing one hundred and seventy specimens.

Twelve volumes of Spelling, containing three hundred and nine specimens.

Six volumes of Primary Work, containing six hundred and thirty-seven specimens.

Two volumes of Miscellaneous Work, containing seventy-four specimens.

Total number of volumes, forty-two.

Total number of specimens, one thousand eight hundred and forty-four.

(2.) *In Frames :*

Five Maps, ten Drawings, and two specimens of Penmanship.

(3.) *In Portfolios :*

Thirty Freehand Drawings, eleven technical, and eleven ornamental, done by the pupils in the Newark Public Schools, under the instruction of Mr. Camerer.

Fifteen Maps and five Drawings.

(4.) *Miscellaneous :*

Sixty-seven photographs of School Buildings, and twenty-eight stereoscopic interior views.

Decennial exhibit of School House Improvements.

History of Schools of Newark.

History of Schools of Orange.

Herbarium containing four hundred species of plants growing in the county.

Herbarium containing fifty species, prepared by Pupils in Montclair Public School.

Twelve Chemicals prepared by Pupils in Newark High School.

One hundred and ten Birds' Eggs, collected and named by Pupils in Montclair Public School.

"Franklin Literary Record," published by Pupils in Franklin Public School.

"Old Hundred," written from memory by Pupils in District School Number Thirty-seven.

Number of Ungraded Schools represented, twenty-six.

Number of Graded Schools represented, forty-one.

Number of High Schools represented, one.

Number of Schools unrepresented, none.

GLOUCESTER COUNTY.

County Superintendent—William Milligan.

(1.) *In Volumes :*

One volume of Drawings, containing forty-eight specimens.

One volume of Maps, containing seventy-six specimens.

Two volumes of Mathematics, containing seventy specimens.

One volume of Analysis, containing twenty-six specimens.

One volume of Composition, containing twenty-one specimens.

One volume of Penmanship, containing fifty-five specimens.

Five volumes of Spelling, containing one hundred and six specimens.

One volume of Primary Work, containing seventy-eight specimens.

Total number of volumes, thirteen.

Total number of specimens, four hundred and eighty.

(2.) *In Frames :*

Four Maps, two Drawings, and one specimen of Penmanship.

(3.) *In Portfolios :*

Two Drawings.

(4.) *Miscellaneous :*

Decennial exhibit of School House Improvements.

History of Schools of the County.

Number of Ungraded Schools represented, sixty-four.

Number of Graded Schools represented, five.

Number of Schools unrepresented, none.

HUNTERDON COUNTY.

County Superintendent—C. S. Conkling.

(1.) *In Volumes :*

One volume of Drawings, containing thirty specimens.

Two volumes of Maps, containing eighty-eight specimens.

Two volumes of Mathematics, containing seventy-nine specimens.

One volume of Analysis, containing thirty-six specimens.

One volume of Composition, containing twenty specimens.

Two volumes of Penmanship, containing one hundred and twenty-two specimens.

Six volumes of Spelling, containing one hundred and forty-nine specimens.

One volume of Primary Work, containing ninety-four specimens.

One volume of Miscellaneous Work, containing eight specimens.

Total number of volumes, seventeen.

Total number of specimens, six hundred and twenty-six.

(2.) *In Frames :*

Two Maps, two Drawings and one specimen of Penmanship.

(3.) *In Portfolios :*

Three Maps.

(4.) *Miscellaneous :*

Two photographs of School Buildings.

Decennial exhibit of School House Improvements.

History of Schools of the County.

Number of Ungraded Schools represented.
ninety-eight.

Number of Graded Schools represented, seven,

Number of Schools unrepresented, none.

HUDSON COUNTY.

County Superintendent—William L. Dickinson.

City Superintendent of Jersey City—Wm. L. Dickinson.

City Superintendent of Hoboken—L. M. Drew.

(1.) *In Volumes :*

Three volumes of Drawings, containing one hundred and twenty specimens.

Three volumes of Maps, containing one hundred and forty-five specimens.

Four volumes of Mathematics, containing one hundred and two specimens.

Three volumes of Analysis, containing fifty-six specimens.

Four volumes of Composition, containing fifty-nine specimens.

Two volumes of Penmanship, containing one hundred and sixty-four specimens.

Fifteen volumes of Spelling, containing three hundred and eleven specimens.

Six volumes of Primary Work, containing five hundred and twenty-six specimens.

Three volumes of Miscellaneous Work, containing fifty-seven specimens.

Total number of volumes, forty-three.

Total number of specimens, one thousand five hundred and forty.

(2.) *In Frames :*

Thirteen Maps, fifty Drawings, and three specimens of Penmanship.

(3.) *In Portfolios :*

Eleven Maps, and forty-seven Drawings.

(4.) *Miscellaneous :*

Thirteen photographs of School Buildings, and eight stereoscopic interior views.

Decennial exhibit of School House Improvements.

History of Schools in the County.

Minerals from West Hoboken, consisting of one hundred and twenty specimens collected by Pupils.

Entomological collection from West Hoboken, consisting of forty-seven specimens of Lepidoptera.

Minerals from Jersey City High School, consisting of One hundred and fifty specimens collected by Charles H. Torrey,

One hundred and fifty specimens collected by two sisters, Jenny and Lucinda Reid,

Two hundred specimens collected by B Class, and

Ten specimens of New Jersey Marls, collected by A. C. Hale, the Teacher.

Entomological collection from Jersey City High School, consisting of

Thirty-four species of Coleoptera,

Forty species of Lepidoptera,

Eighteen species of Hymenoptera, and

Twelve species of Diptera.

Three pieces of original Music, composed by Pupils in West Hoboken Public School.

Number of Ungraded Schools represented, nine.

Number of Graded Schools represented, thirty.

Number of High Schools represented, one.

Number of Schools unrepresented, none.

MERCER COUNTY.

County Superintendent—William J. Gibby.

City Superintendent of Trenton—Cornelius Shepherd.

(1.) *In Volumes :*

Two volumes of Drawings, containing eighty-two specimens.

Three volumes of Maps, containing one hundred and forty-eight specimens.

Three volumes of Mathematics, containing one hundred and twenty specimens.

Two volumes of Analysis, containing forty-one specimens.

One volume of Composition, containing twelve specimens.

Three volumes of Penmanship, containing one hundred and fifty-eight specimens.

Five volumes of Spelling, containing eighty-nine specimens.

One volume of Primary Work, containing one hundred and nine specimens.

Two volumes of Miscellaneous Work, containing twenty-nine specimens.

Total number of volumes, twenty-two.

Total number of specimens, seven hundred and eighty-eight.

(2.) *In Frames :*

Five Maps, six Drawings, and two specimens of Penmanship.

(3.) *In Portfolios :*

Five Maps and eleven Drawings.

(4.) *Miscellaneous :*

Thirty-two photographs, and one stereoscopic interior view.

Decennial exhibit of School House Improvements.

History of Schools of the County.

History of Schools of Trenton.

Number of Ungraded Schools represented, fifty-three.

Number of Graded Schools represented, fifteen.
Number of High Schools represented, one.
Number of Schools unrepresented none.

MIDDLESEX COUNTY.

County Superintendent—Ralph Willis.

City Superintendent of New Brunswick--Henry B. Pierce.

City Superintendent of Perth Amboy—Henry Farmer.

(1.) *In Volumes :*

Two volumes of Drawings, containing thirty-three specimens.

Three volumes of Maps, containing one hundred and fifteen specimens.

Two volumes of Mathematics, containing forty-one specimens.

One volume of Analysis, containing twenty-seven specimens.

Two volumes of Composition, containing twenty-seven specimens.

Two volumes of Penmanship, containing sixty-three specimens.

Six volumes of Spelling, containing one hundred and twenty-nine specimens.

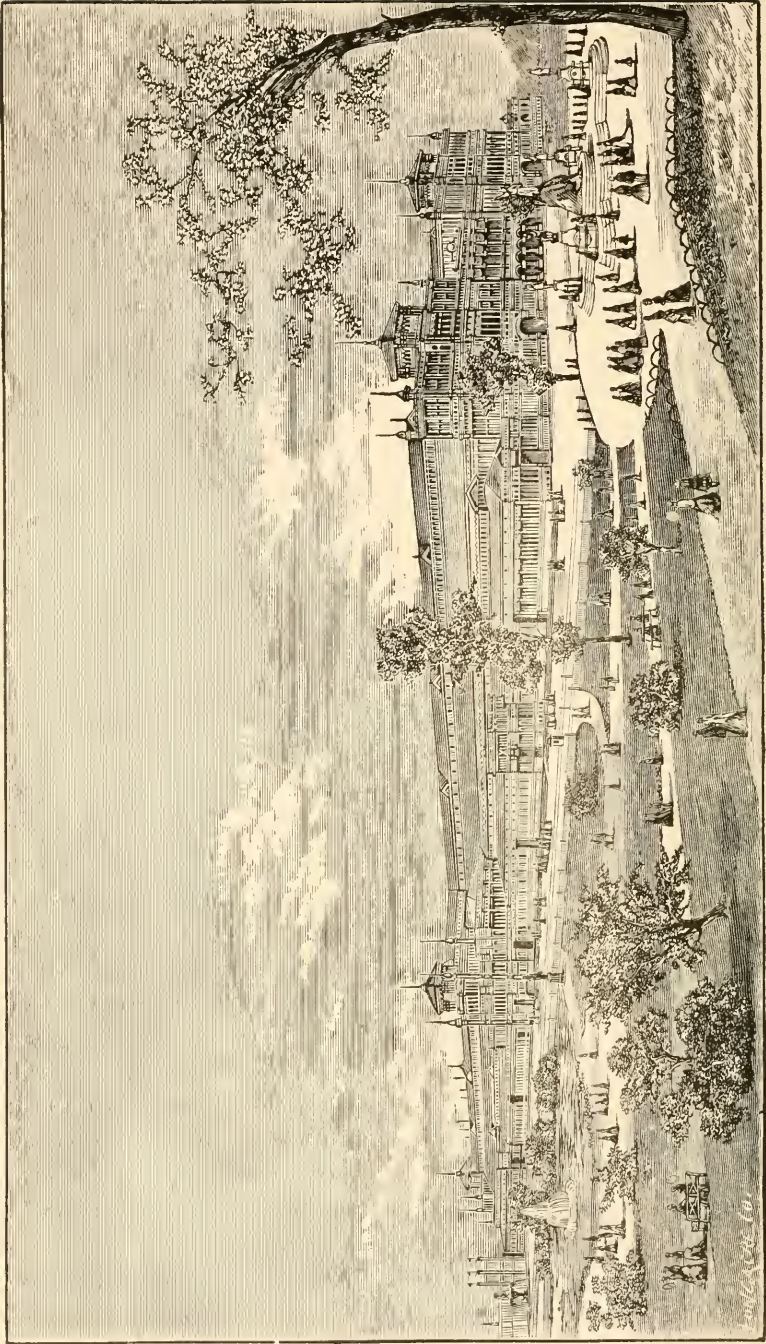
One volume of Primary Work, containing fifty-eight specimens.

Total number of volumes, nineteen.

Total number of specimens, four hundred and ninety-three.

(2.) *In Frames :*

Five Maps, one Drawing, and one specimen of Penmanship.



MACHINERY MALL.

(3.) *In Portfolios :*

Two Maps and four Drawings.

(4.) *Miscellaneous :*

Seven photographs of School Buildings.

Decennial exhibit of School House Improvements.

History of Schools of the County.

History of Schools of New Brunswick.

Birds of New Jersey, by G. B. Hardenbergh. These birds are in water colors, natural size, and drawn from nature. Twenty-seven species are given, some figures showing both sexes.

Number of Ungraded Schools represented, sixty.

Number of Graded Schools represented, ten.

Number of High Schools represented, one.

Number of Schools unrepresented, eight.

MONMOUTH COUNTY.

County Superintendent—Samuel Lockwood.

(1.) *In Volumes :*

One volume of Drawings, containing sixty-eight specimens.

Four volumes of Maps, containing two hundred and thirty specimens.

One volume of Mathematics, containing thirty-nine specimens.

One volume of Analysis, containing thirty-six specimens.

Two volumes of Composition, containing fifty-three specimens.

Two volumes of Penmanship, containing one hundred and thirty-eight specimens.

Twelve volumes of Spelling, containing two hundred and fifty-nine specimens.

One volume of Primary Work, containing one hundred and sixteen specimens.

One volume of Miscellaneous Work, containing fifteen specimens.

Total number of volumes, twenty-five.

Total number of specimens, nine hundred and fifty-four.

(2.) *In Frames :*

Seven Maps, two Drawings, and one specimen of Penmanship.

(3.) *In Portfolios :*

Four Maps, eight Drawings, and sixteen Plans of School Houses.

(4.) *Miscellaneous :*

Ten photographs of School Buildings, and one stereoscopic interior view.

Decennial exhibit of School House Improvements.

History of Schools of the County.

Several mechanical contrivances and objects made by pupils in the Keyport Graded School, consisting of a hollow globe, ten inches in diameter ; a model of a wire suspension bridge, eighteen inches long ; a model of a steam engine, ten inches long ; a model of a pump made of glass ; a cake of soap, and a small quantity of starch.

A full sized Portrait in crayon of the County Superintendent, drawn by E. B. Taber, a pupil in the Long Branch Public School.

Ethnology of Monmouth County, New Jersey, by Samuel Lockwook, Teacher. This collection con-

sists of stone implements and other relics of the pre-colonial race of Monmouth County, and is taken from a larger collection, which has been the work of twenty years. It is so classified as to constitute an educational apparatus in the department of Anthropology. The collection is divided into four compartments. The first shows implements pertaining to woman's work, culinary, &c. The second shows the material, and processes of pottery and arrow making. The third exhibits the social and warrior life of the ancient man. Herein are contained implements of ceremony, badges of distinction, stone records of victories, balls for games, sinkers for fishing, &c. The fourth exhibits cutting implements, stone axes, tomahawks, cutting knives, scrapers, oyster knives, skinners, &c. The collection has a unique value, from its completeness as a local exhibit.

Number of Ungraded Schools represented, one hundred and seventeen.

Number of Graded Schools represented, seven.

Number of Schools unrepresented, none.

MORRIS COUNTY.

County Superintendent—L. W. Thurber.

(1.) *In Volumes:*

One volume of Drawings, containing forty specimens.

Three volumes of Maps, containing one hundred and fifty-two specimens.

Two volumes of Mathematics, containing forty-six specimens.

One volume of Analysis, containing fifteen specimens.

One volume of Composition, containing seven specimens.

One volume of Penmanship, containing forty-four specimens.

Six volumes of Spelling, containing one hundred and twenty-six specimens.

One volume of Primary Work, containing twenty-three specimens.

One volume of Miscellaneous Work, containing thirteen specimens.

Total number of volumes, seventeen.

Total number of specimens, four hundred and sixty-six.

(2.) *In Frames :*

Thirteen Maps, five Drawings, and one specimen of Penmanship.

(3.) *In Portfolios :*

Five Maps and Three Drawings.

(4.) *Miscellaneous :*

Seventeen photographs of School Buildings, and four stereoscopic interior views.

Decennial exhibit of School House Improvements.

History of Schools of the County.

Number of Ungraded Schools represented, eighty-three.

Number of Graded Schools represented, eight.

Number of Schools unrepresented, seven.

OCEAN COUNTY.

County Superintendent—Edward M. Lonan.

(1.) *In Volumes :*

One volume of Drawings, containing fifteen specimens.

One volume of Maps, containing fifty-five specimens.

One volume of Mathematics, containing twenty specimens.

One volume of Analysis, containing seventeen specimens.

One volume of Composition, containing three specimens.

One volume of Penmanship, containing twenty-six specimens.

Three volumes of Spelling, containing sixty-eight specimens.

One volume of Primary Work, containing fifty-two specimens.

One volume of Miscellaneous Work, containing seventeen specimens.

Total number of volumes, eleven.

Total number of specimens, two hundred and seventy-three.

(2.) *In Frames :*

One Map, one Drawing, and one specimen of Penmanship.

(3.) *In Portfolios :*

One Map.

(4.) *Miscellaneous :*

Decennial exhibit of School House Improvements.

Number of Ungraded Schools represented, thirty-six.

Number of Graded Schools represented, three.

Number of Schools unrepresented, nine.

PASSAIC COUNTY.

County Superintendent—J. C. Cruikshank.

City Superintendent of Paterson—Wm. J. Rogers.

City Superintendent of Passaic City—Samuel W. Rice.

(1.) *In Volumes:*

Two volumes of Drawings, containing thirty-three specimens.

Three volumes of Maps, containing one hundred and eighteen specimens.

Three volumes of Mathematics, containing one hundred and three specimens.

One volume of Analysis, containing thirty-four specimens.

Two volumes of Composition, containing forty-three specimens.

Two volumes of Penmanship, containing seventy-four specimens.

Six volumes of Spelling, containing one hundred and thirty-eight specimens.

Two volumes of Primary Work, containing two hundred and three specimens.

One volume of Miscellaneous Work, containing sixteen specimens.

Total number of volumes, twenty-two.

Total number of specimens, seven hundred and fifty-nine.

(2.) *In Frames:*

Three Maps, two Drawings and one specimen of Penmanship.

(3.) *In Portfolio:*

One Drawing.

(4.) *Miscellaneous:*

Decennial exhibit of School House Improvements.

History of Schools of the County.

History of Schools of Paterson.

Number of Ungraded Schools represented,
twenty-nine.

Number of Graded Schools represented, twelve.

Number of High Schools represented, one.

Number of Schools unrepresented, five.

SALEM COUNTY.

County Superintendent—William H. Reed.

City Superintendent of Salem City—T. Patterson.

(1.) *In Volumes:*

One volume of Drawings, containing twenty-five specimens.

One volume of Maps, containing seventy-eight specimens.

One volume of Mathematics, containing forty-nine specimens.

One volume of Analysis, containing twenty-six specimens.

One volume of Composition, containing five specimens.

One volume of Penmanship, containing sixty-two specimens.

Four volumes of Spelling, containing seventy-nine specimens.

One volume of Primary Work, containing ninety-three specimens.

Total number of volumes, eleven.

Total number of specimens, four hundred and seventeen.

(2.) *In Frames :*

Three Maps and one specimen of Penmanship.

(3.) *In Portfolio :*

One Drawing.

(4.) *Miscellaneous :*

Twenty-six photographs of School Buildings.
Decennial exhibit of School House Improvements.
History of Schools of the County.

Number of Ungraded Schools represented, sixty-eight.

Number of Graded Schools represented, three.

Number of Schools unrepresented, six.

SOMERSET COUNTY.

County Superintendent—Elias W. Rarick.

(1.) *In Volumes :*

One volume of Drawings, containing twenty specimens.

Two volumes of Maps, containing one hundred and twenty-four specimens.

One volume of Mathematics, containing twenty-four specimens.

One volume of Analysis, containing eighteen specimens.

One volume of Composition, containing twelve specimens.

One volume of Penmanship, containing twenty-eight specimens.

Two volumes of Spelling, containing forty-five specimens.

One volume of Primary Work, containing twenty-four specimens.

Total number of volumes, ten.

Total number of specimens, two hundred and ninety-five.

(2.) *In Frames :*

Three Maps and one specimen of Penmanship.

(3.) *In Portfolio :*

One Drawing.

(4.) *Miscellaneous :*

Decennial Exhibit of School House Improvements.

Number of Ungraded schools represented, fifty-eight.

Number of Graded Schools represented, three.

Number of Schools unrepresented, thirteen.

SUSSEX COUNTY.

County Superintendent—L. Hill.

(1.) *In Volumes :*

One volume of Drawings, containing thirty-two specimens.

One volume of Maps, containing fifty-six specimens.

One volume of Mathematics, containing sixty-two specimens.

One volume of Analysis, containing thirty specimens.

One volume of Composition, containing seven specimens.

One volume of Penmanship, containing sixty-two specimens.

Three volumes of Spelling, containing seventy-one specimens.

One volume of Primary Work, containing ninety-two specimens.

Total number of volumes, ten.

Total number of specimens, four hundred and twelve.

(2.) *In Frames :*

One Map, three Drawings, and one specimen of Penmanship.

(3.) *Miscellaneous :*

Decennial Exhibit of School House Improvements.

History of Schools of the County.

Number of Ungraded Schools represented, seventy-eight.

Number of Graded Schools represented, one.

Number of Schools unrepresented, thirty-five.

UNION COUNTY.

County Superintendent—N. W. Pease.

City Superintendent of Elizabeth City—E. D. Smith.

City Superintendent of Rahway—Jas. Anderson.

City Superintendent of Plainfield—C. H. Stillman.

(1.) *In Volumes :*

Four volumes of Drawings, containing eighty-two specimens.

Two volumes of Maps, containing eighty-two specimens.

Six volumes of Mathematics, containing one hundred and sixty-nine specimens.

One volume of Analysis, containing thirty-eight specimens.

Four volumes of Composition, containing thirty-three specimens.

Two volumes of Penmanship, containing eighty-seven specimens.

Ten volumes of Spelling, containing one hundred and fifty-six specimens.

Three volumes of Primary Work, containing one hundred and fifty-six specimens.

One volume of Miscellaneous Work, containing twenty-three specimens.

Total number of volumes, thirty-three.

Total number of specimens, eight hundred and twenty-six.

(2.) *In Frames :*

Two Maps, one Drawing, and one specimen of Penmanship.

(3.) *In Portfolios :*

Four Maps and one Drawing.

(4.) *Miscellaneous :*

Eight photographs of School Buildings and two stereoscopic interior views.

Decennial Exhibit of School House improvements.

History of Schools of the County.

History of Schools of Elizabeth.

History of Schools of Plainfield.

History of Schools of Rahway.

Kindergarten work from Elizabeth, consisting of paper weavings and needle work.

Thirty-four Silhouettes, cut without assistance or copy

by two sisters—Isabel and Alma De Mier—representing Mythological and other figures.

Number of Ungraded Schools represented, nineteen.

Number of Graded Schools represented, fifteen.

Number of Schools unrepresented, none.

WARREN COUNTY.

County Superintendent—E. Dietrich.

City Superintendent of Phillipsburg—F. C. Tolles.

(1.) *In Volumes :*

One volume of Drawings, containing thirty-six specimens.

Three volumes of Maps, containing one hundred and seventy specimens.

Three volumes of Mathematics, containing one hundred and eleven specimens.

Two volumes of Analysis, containing sixty-five specimens.

Two volumes of Composition, containing forty-seven specimens.

One volume of Penmanship, containing seventy-three specimens.

Eight volumes of Spelling, containing one hundred and forty-nine specimens.

Two volumes of Primary Work, containing one hundred and forty-nine specimens.

One volume of Miscellaneous Work, containing twenty-three specimens.

Total number of volumes, twenty-three.

Total number of specimens, eight hundred and twenty-three.

-
- (2.) *In Frames :*
Six Maps, one Drawing, one specimen of Plain and two of Ornamental Penmanship.
- (3.) *In Portfolios :*
Two Maps and two Drawings.
- (4.) *Miscellaneous :*
Four photographs of School Buildings.
Decennial Exhibit of School House Improvements.
History of Schools of the County.
Number of Ungraded Schools represented, seventy-three.
Number of Graded Schools represented, nine.
Number of Schools unrepresented, twelve.

Colleges.

COLLEGE OF NEW JERSEY.

The exhibit made by the College of New Jersey consists of a collection of books written by Alumni and Officers of the College, numbering seven hundred and thirty bound volumes and several hundred pamphlets, including one thousand, one hundred and sixteen titles. Their authors

number two hundred and sixty. The contents are largely theological. The other professions, however, are creditably represented. Sixteen volumes upon medical topics bear the names of Rush, Hosack and Hodge. Seventeen discussions on Municipal and Constitutional Law are the work of Madison, Livingston, Ingersoll, Dallas, and the two Sergeants. Joseph Henry and Stephen Alexander have furnished contributions in Physical and Astronomical Science. Among the writers on the Natural Sciences are Barton and Guyot. In Mental and Moral Sciences we have contributions from such philosophers as Edwards, Beasley, Atwater and McCosh. Among the authors in Oriental Philology are the names of Addison Alexander, J. C. Hepburn and William H. Green. The history of our country, as a whole, has been enriched by the compilations of Hazard and Ramsey. This collection contains more than forty single Biographies. Contributions in Poetry, Fiction, Travels and Literary History will also be found on the Princeton shelves.

RUTGERS COLLEGE.

The exhibit made by Rutgers College consists of the following :

Photographic Views of College Buildings.—General view of College Buildings and Campus. Queen's (now Rutgers) College, erected in 1776. Rutgers College, 1809. President's House, 1842. Van Nest Hall, 1845. Astronomical Observatory, 1865. Geological Hall, 1872. Kirkpatrick Chapel, 1873. College Farm Dwelling and Buildings, 1865.

Portraits of Faculty of 1776.—General Frederick Frelinghuysen, Colonel John Taylor.

Chart showing the number of Students, Graduates and Faculty each year since the founding of the College.

Students' Work.—Map and section of an old Tunnel north of the College, cut through from Mile Run to the Raritan

River, for the purposes of copper mining; date about 1760. Map of New Brunswick in 1876, showing the location of the College Buildings and of Agricultural College Farm. Map showing the extension of the Geodetic Survey of New Jersey. Model of the College Campus, in horizontal layers of colored woods, showing the inequalities of surface and planes of level.

Instruments and Apparatus for Illustration.—Surveyor's Compass used by General Washington in 1748. Surveyor's Instrument, 1876, with needle, telescope, double circle, and solar attachment. Constant Battery, set in operation on closed circuit May 17, and without renewal or change, still in operation August 10. Model of Laboratory Desk, designed to secure protection from draughts of air, dust and interference. Model of a Filter Pump, simple construction and satisfactory performance. Collection from Students' Herbarium of five hundred species of plants. Musci et Lichenes Nova Cæsariensis, in four large folio volumes. Collection of choice and beautiful crystallized Minerals, twenty-five specimens. Selection of Geological specimens found near the College, boulders with diluvial scratches, fossil fishes, mosasaurus jaw with teeth in three stages of growth; mastadon teeth perfect and immature. mastadon tusk ground down by glacial action.

Private Schools.

Closter Institute, Closter, Bergen County—*Contributes* three specimens of Penmanship, one of Parsing, four of Mathematical Work, three of Spelling, two of Composition and one of History.

New Jersey Collegiate Institute, Bordentown, Burlington County—*Contributes* Problems in Maxima and Minima, in Differential, Integral and Variational Calculus; Problems in Trigonometry, Surveying, Algebra and Arithmetic; Translations in Latin; Specimens of Parsing, Book-keeping, Penmanship, Etymology and Drawing.

Haddon Institute, Haddonfield, Camden County—*Contributes* specimens of Drawing, Composition, Penmanship, Spelling, Grammar, Mathematics, Maps, and copy of "Paper."

The Philotechnic Institute, of Camden, Camden County—*Exhibits* Charts used for teaching by the Pantographic method; the larger one, in two parts, shows the geological history of the plant and animal kingdoms. The pictures show types of the genera exhibited, and the rays indicate their duration, and the formations in which their fossil remains are found. The other Charts show families, species, etc., of animals, plants and minerals, and the etymology of their names. Also, the Lord's Prayer in Greek in colors, representing the different genders; and a Crayon Sketch by one of the pupils.

St. Mary's Academy, Newark, Essex County—*Contributes* specimens of Spelling, Arithmetic, Algebra, Penmanship, Composition, Grammar, Analysis, Latin, French, Drawing and Maps.

The German-American Elementary and Real School, Newark, Essex County—*Contributes* specimens of Geometry, Algebra, Arithmetic, Book-keeping, French, German and English Composition, Grammar, Natural Philosophy, Maps, Drawing, Penmanship and Kindergarten Work.

Essex Hall, Orange, Essex County—*Contributes* one specimen of Mathematical Work, four of Penmanship, one of Composition, one of Spelling, nine of Miscellaneous, one of Drawing, two of Maps, Translations from Latin and Greek, and "The Lunch Box," published by pupils.

Select School, Swedesboro', Gloucester County—*Contributes* one specimen of Mathematical Work, one of Penmanship, two of Grammar, one of Composition, two of Miscellaneous and Primary Work.

Deptford School, Woodbury, Gloucester County—*Contributes* three specimens of Mathematical Work, two of Composition, four of Penmanship, one Calculation of Survey.

St. Aloysius Academy, Jersey City, Hudson County—*Contributes* specimens of Arithmetic, Algebra, Analysis, Spelling, Composition, Penmanship, Maps and Drawing.

Hoboken Academy, Hoboken, Hudson County—*Contributes* eight Drawings in Pencil.

Ringo's Seminary, Ringoes, Hunterdon County—*Contributes* specimens of Maps, Composition, History, Translations, Analysis and Mathematical Work.

Classical School, Flemington, Hunterdon County—*Contributes*

six specimens in Arithmetic, two in Algebra, two of Composition, four of Maps, three of Spelling, Penmanship, Drawing and Primary Work.

Select School, Lambertville, Hunterdon County—*Contributes* two specimens of Mathematical Work, one of Drawing, Abstracts of English and United States History, English Literature and Music.

Hopewell Seminary, Hopewell, Mercer County—*Contributes* one specimen of Drawing, two of Maps, three of Mathematical Work, two of Analysis, one of Composition, one of Spelling and three of Miscellaneous.

Peddie Institute, Hightstown, Mercer County—*Contributes* specimens of Mathematical Work, Translations of Latin and Greek, Mental Science, Rhetoric, Physical Science and Drawing.

Young Ladies' Seminary, Hightstown, Mercer County—*Contributes* specimens of Maps, Mathematical Work, Analysis, Penmanship, Spelling, Composition and Chemistry.

Soldiers' Children's Home, Trenton, Mercer County—*Contributes* nine Maps and six Drawings.

Woodbridge Institute, Woodbridge, Middlesex County—*Contributes* two specimens of Maps and four of Spelling.

Select School, South River, Middlesex County—*Contributes* one specimen of Penmanship, one of Drawing and one of Spelling.

Young Ladies' Seminary, New Brunswick, Middlesex County—*Contributes* specimens of Mathematical Work, Analysis, Penmanship and Spelling.

Freehold Institute, Freehold, Monmouth County—*Contributes* one specimen of Drawing, three of Maps, two of Mathematical Work, one of Analysis, one of Composition, one of Penmanship, four of Spelling, two of Primary Work and one of Miscellaneous.

-
- Brainerd Institute*, Cranbury, Middlesex County—*Contributes* thirty Geometrical Forms made by pupils, forty-two specimens of Maps, Mathematical Work, Book-keeping, etc., and twenty-five Ornamental Cards.
- St. Elizabeth Seminary*, Madison, Morris County—*Contributes* a large piece of Worsted Tapestry,—Washington Crossing the Delaware; two Oil Paintings, Landscape and Vase of Flowers; one Pastel, Bust of Washington; and one piece of Ornamental Penmanship.
- Select School*, McCainsville, Morris County—*Contributes* one specimen of Drawing, three of Maps, one of Mathematical Work, one of Analysis, one of Composition, two of Penmanship, four of Spelling and two of Miscellaneous.
- Paterson Seminary*, Paterson, Passaic County—*Contributes* seven specimens of Mathematical Work and three of Miscellaneous.
- Collegiate Institute*, Salem City, Salem County—*Contributes* four specimens of Penmanship, three of Composition, two of Grammar and one of Spelling.
- Woodstown Academy*, Woodstown, Salem County—*Contributes* eight Drawings in Pencil and six Drawings in Oil.
- Select School*, Woodstown, Salem County—*Contributes* specimens of Penmanship, Spelling, Maps, Mathematical Work, Analysis, Composition, Drawing and Primary Work.
- Oakside School*, Wantage, Sussex County—*Contributes* one volume of Pupils' Work, containing specimens of Book-keeping, Mathematical Work, Natural Philosophy, Geometry, Latin and Grammar.
- Blair Presbyterial Academy*, Blairstown, Warren County—*Contributes* specimens of Spelling, Trigonometry and Scanning.

Belvidere Seminary, Belvidere, Warren County—Contributes two specimens of Arithmetic, four of Algebra, four of Geometry, one of Trigonometry, three of German, two of Composition, two of Spelling, two of Physiology, four of Drawings and two of Miscellaneous.

Centenary Collegiate Institute, Hackettstown, Warren County—Contributes two photographs of College Building, and Catalogue.

Total number of volumes, fourteen.

Total number of specimens, seven hundred and twenty.

Total number of Private Schools represented, thirty-three.

Summary for the State.

PUBLIC SCHOOLS.

(1.) *In Volumes:*

Drawings, number of specimens,	1,190
Maps, number of specimens,	2,607
Mathematics, number of specimens,	1,602
Penmanship, number of specimens,	1,808
Grammar, number of specimens,	714

Composition, number of specimens,	630
Spelling, number of specimens,	2,821
Primary Work, number of specimens,	3,147
Miscellaneous Work, number of specimens,	340
Total number of volumes,	438
Number of specimens in vol- umes,	14,859

(2.) *In Frames :*

Drawings, number of specimens,	106
Maps, number of specimens,	99
Penmanship, number of specimens,	32
Number of specimens in Frames,	237

(3.) *In Portfolios :*

Drawings, number of specimens,	132
Maps, number of specimens,	57
Number of specimens in Port- folios,	189

(4.) *Miscellaneous :*

Number of Photographs of School Buildings,	333
Number of Stereoscopic views,	69
Number of Decennial Exhibits in Manuscript,	21
Number of School Histories,	27

A complete set of State Educational reports from 1839 to 1875, inclusive, bound in seven volumes.

A full set of Blanks and Forms used in conducting School business.

Copies of the School Law, containing blanks, forms and directions.

Large Pen Drawing, 48x32 inches, representing the progress made in the United States during the past century, executed by D. T. Ames, of Elizabeth.

Cryptogamia of New Jersey, arranged by Coe F. Austin, including

Five hundred and twenty-six species of Musci ;	
One hundred and sixty-eight species of Hepaticæ ;	
Two hundred and fourteen species of Lichenes.	
Total number of specimens of Miscellaneous,	865
Total number of Books exhibited by the Col- leges,	730
Total number of Minerals, etc., exhibited by the Colleges,	62
Total number of specimens of Pupils' Work furnished by the Private Schools,	720

GRAND TOTAL.

Number of Colleges represented,	2
Number of Private Schools represented,	33
Number of Public Ungraded Schools represented, . . .	1,184
Number of Public Graded Schools represented, . . .	230
Number of High Schools represented,	
Number of Public Schools unrepresented,	120
Total number of Public Schools in State,	1,542
Number of Public School Teachers in the State, . . .	2,810
Number of Public School Teachers who furnished work, . . . ,	2,690
Percentage of School Teachers who furnished work,	95 per cent.
Number of Pupils who furnished work,	14,000
Number of Specimens from Public Schools,	16,150
Number of specimens from Colleges and Private Schools,	1,512
Total number of Specimens exhibited,	17,662

Synopsis of the Public School System.

SUPERVISION.

1. *The State Board of Education* consists of the Trustees of the School Fund, the Trustees of the State Normal School and the Treasurer thereof. It has power to prescribe rules for the enforcement of the school law; to appoint the State Superintendent of Public Instruction, and the County Superintendents, subject to the approval of their respective Boards of Freeholders; to decide all appeals from the decision of the State Superintendent, and reports annually to the Legislature.

2. *The State Superintendent of Public Instruction* is elected for three years. He decides all disputes arising under the school law, subject to appeal; apportions the school funds among the several counties, and issues his orders on the State Comptroller for the payment of the same. He is, *ex officio*, Secretary of the Board of Education, President of the State Association of Superintendents, and a member of all State and County Boards of Examiners. He has a general oversight of all the Schools of the State; issues instructions to the County Superintendents; prepares all blanks needed for the transaction of school business, and reports annually to the State Board.

3. *County Superintendents* hold office for three years. They apportion the school moneys among the several townships and districts, and issue orders for the payment of the same to the Township Collectors; examine and license teachers; fix the boundaries of school districts; decide all disputes under the school law, subject to appeal to the State

Superintendent; fill all vacancies in Boards of Trustees, and make an annual report to the State Superintendent of the general condition of the schools. Each County Superintendent is required to visit each school in the county at least twice each year. Each city has a City Superintendent.

4. *School Trustees* are elected by the voters of the district, and hold office for three years. Women are eligible for this office. Each Board consists of three Trustees, one of whom is elected District Clerk. The District Clerk preserves the financial records of the district, and takes a census of the school children each year. The Trustees have the power to employ teachers, janitors, etc., and fix their salaries; to erect and keep in repair all school buildings. The Trustees of the several districts in a township constitute an association known as the Township Board of Trustees, which meets on the call of the County Superintendent, for the purpose of considering methods for the more effective management of the schools.

FINANCES.

State Funds.—The Trustees of the School Fund are the Governor, the President of the Senate, the Speaker of the House of Assembly, the Attorney General, the Secretary of State and the Comptroller. All moneys received from the sale and rental of lands under water, from the tax on the capital stock of banking and insurance companies, and all gifts and legacies, are invested and form a permanent fund, and out of the income from said fund there is appropriated \$40,000, which, with \$60,000 appropriated from the State revenue, forms an annual appropriation, which is apportioned among the several counties on the basis of the school census. The amount of the State School Fund is now about \$2,000,000, and is constantly increasing. In addition to the above State appropriation there is a State tax of two mills on

each dollar of valuation of all the taxable property in the State, which is apportioned among the several counties in the same manner. The amount derived annually from this source and appropriated by the State for the support of schools is about \$1,200,000.

County Funds.—The interest arising from the surplus revenue of each county is appropriated to the support of public schools. The amount derived annually from this fund is about \$30,000.

Township Funds.—The townships are authorized to raise by taxation an additional amount for school purposes, if necessary. The amount raised last year by township school tax was \$24,865.

District Funds.—Each district has power to raise funds for the erection or repair of school houses, by taxation or by the issue of bonds. About one half a million of dollars is annually raised in the State for this purpose.

All the money derived from the State appropriation, from the surplus revenue and from township school tax, except twenty dollars for each district for incidentals, must be used for the payment of teachers' salaries and the purchase of fuel.

TEACHERS.

Teachers must be of good moral character, and must hold either a State or a County Certificate to entitle them to teach in the State. They must keep a register giving the names, ages, attendance, etc., of the pupils.

PUPILS.

The school census includes all children between five and eighteen years of age. They must attend school in the district in which they reside.

NORMAL SCHOOL.

The Board of Trustees of the Normal School consists of two members from each Congressional District, who are nominated by the Governor and confirmed by the Senate, and who hold office for two years. The State Superintendent of Public Instruction is, *ex officio*, a member of the Board. They have control of the buildings, the funds for its support, the appointment of the teachers, and exercise a general supervision over the school. They report annually to the Legislature. The pupils are received on condition that they teach at least two years in the State. The school is supported by an annual State appropriation of \$15,000. There is but one Normal School in the State, which is located at Trenton. Tuition is free, and board is furnished at cost. In connection with the Normal School proper, where teachers are trained and educated, there is a Model School, where small children are taught, and where those who are being trained for teachers have an opportunity to witness the actual work of imparting instruction. Ample boarding accommodations are provided. The buildings now in use are owned by the State, and are valued at \$250,000. The attendance last year was 269 in the Normal Department, and 414 in the Model Department. The number of graduates in the teachers' department each year is about fifty.

DISTRICT SCHOOLS.

Each district must provide suitable buildings and maintain free school at least nine months in each year, to entitle it to a share of the school moneys.

EXAMINATIONS.

There is a State Board of Examiners, consisting of the

State Superintendent of Public Instruction and the Principal of the Normal School, who grant certificates of three grades:—First, good for life; second, for seven years; third, for five years. In each county there is a County Board of Examiners, consisting of the County Superintendent and such others, not exceeding three, whom he may appoint. They, also, grant certificates of three grades:—First, good for three years; second, for two years; third, for one year. Examinations are held quarterly, and the questions used are uniform throughout the State.

Each city has a City Board of Examiners, who are authorized to examine and license teachers.

INSTITUTES.

Teachers' institutes are held annually in each county. By a rule of the State Board of Education all teachers are required to attend. To defray the expenses the State appropriates one hundred dollars for each Institute.

LIBRARIES.

The State Treasurer, upon the order of the State Superintendent, is authorized to pay twenty dollars to any school district that shall raise a like sum for the purpose of establishing a school library, and ten dollars annually thereafter on the same condition.

OTHER FEATURES.

No teacher is allowed to inflict corporal punishment.

All children must attend school for twelve weeks consecutively in each year, or be taught at home for the same period.

CONSTITUTIONAL PROVISIONS.

The Constitution provides—

First—That the State shall maintain an efficient system of public schools for all children between the ages of five and eighteen.

Second—That the Legislature shall not pass any private, local or special law providing for the management and support of the public schools.

Third—That no appropriations of any kind shall be made for the support of denominational schools.

DECENNIAL EXHIBIT
OF
School House Improvement.

Increase of Valuation.

COUNTIES.	Valuation of School Property in 1866.	Valuation of School Property in 1876.
Atlantic.....	\$20,000	\$85,000
Bergen.....	65,000	230,000
Burlington.....	90,000	200,000
Camden.....	80,000	410,000
Cape May.....	5,000	50,000
Cumberland.....	40,000	190,000
Essex.....	325,000	1,385,000
Gloucester.....	45,000	130,000
Hudson.....	275,000	1,040,000
Hunterdon.....	70,000	165,000
Mercer.....	75,000	210,000
Middlesex.....	85,000	280,000
Monmouth.....	60,000	270,000
Morris.....	70,000	225,000
Ocean.....	10,000	65,000
Passaic.....	55,000	305,000
Salem.....	30,000	95,000
Somerset.....	65,000	105,000
Sussex.....	35,000	150,000
Union.....	95,000	350,000
Warren.....	50,000	265,000
	\$1,645,000	\$6,205,000

Condition of Schools as to Buildings and Furniture.

Counties.	Years.	Number with Very	Number with Poor	Number with Me-	Number With Good	Number with Very	Number with Poor	Number with Me-	Number with Good	Total.
		Poor Buildings.	Buildings.	dium Buildings.	Buildings.	Good Buildings.	Furniture.	dium Furniture.	Furniture.	
Atlantic.....	1866	12	3	5	12	1	28	4	1	33
	1876	12	8	4	5	15	15	9	20	44
	Increase, Decrease,	10	5	1	3	14	13	5	19	
Bergen.....	1866	4	13	21	17	27	23	24	8	55
	1876	1	2	15	27	32	2	24	41	67
	Increase, Decrease,	3	11	6	10	32	21	2	33	
Burlington.....	1866	28	29	18	32	3	83	10	17	110
	1876	8	15	18	57	23	47	16	58	121
	Increase, Decrease,	20	14	1	25	20	36	6	41	
Camden.....	1866	8	10	11	9	3	27	9	5	41
	1876	1	4	13	17	28	5	11	46	62
	Increase, Decrease,	8	6	2	8	25	22	2	41	
Cape May.....	1866	11	9	4	2	2	24	2	2	26
	1876	1	5	3	9	9	5	5	16	26
	Increase, Decrease,	11	4	1	7	9	19	3	16	
Cumberland.....	1866	28	7	5	17	4	34	17	10	61
	1876	8	4	6	25	36	10	24	45	79
	Increase, Decrease,	20	3	1	8	32	24	7	35	
Essex.....	1866	10	21	13	13	39	39	8	10	57
	1876	1	4	14	33	16	9	1	57	67
	Increase, Decrease,	10	17	1	20	16	30	7	47	
Gloucester.....	1866	23	16	1	18	4	37	10	15	62
	1876	6	7	4	17	32	10	5	51	66
	Increase, Decrease,	17	9	3	1	28	27	5	36	
Hudson.....	1866	7	8	2	8	1	16	2	8	26
	1876	2	8	8	11	21	2	7	33	42
	Increase, Decrease,	5	8	6	3	20	14	5	25	
Hunterdon.....	1866	27	19	28	27	2	62	33	8	103
	1876	1	7	22	42	33	18	32	55	105
	Increase, Decrease,	26	12	6	15	31	44	1	47	
Mercer.....	1866	11	11	6	21	9	42	6	10	58
	1876	1	4	4	23	38	8	8	50	66
	Increase, Decrease,	10	11	2	2	29	34	2	40	
Middlesex.....	1866	20	22	15	12	40	40	24	5	69
	1876	1	6	19	16	34	8	28	40	76
	Increase, Decrease,	19	16	4	4	34	32	4	25	
Monmouth.....	1866	36	27	29	15	2	55	37	17	109
	1876	2	3	19	46	51	5	33	83	121
	Increase, Decrease,	34	24	10	29	49	50	4	66	

Condition of Schools as to Buildings and Furniture.

Counties.	Years.	Number with Very	Poor	Number with Me-	Good	Number with Very	Poor	Number with Me-	Good	Total.
		Poor Buildings.	Buildings.	dium Buildings.	Buildings.	Good Buildings.	Furniture.	dium Furniture.	Furniture.	
Morris	1866	9	33	20	27	2	56	27	8	91
	1876	1	8	17	47	29	16	26	69	102
	Increase, Decrease,	8	25	3	20	27	40	1	52	
Ocean	1866	22	6	4	1	.....	30	3	.....	33
	1876	3	6	7	17	11	9	11	24	44
	Increase, Decrease,	19	.....	3	16	11	21	8	24	.....
Passaic	1866	18	8	6	5	.....	25	7	5	37
	1876	4	7	11	8	16	10	14	22	46
	Increase, Decrease,	14	1	5	3	16	15	7	17	.....
Salem	1866	17	25	21	4	.....	46	18	3	67
	1876	1	1	20	13	32	1	24	42	67
	Increase, Decrease,	16	24	1	9	32	45	6	39	.....
Somerset	1866	10	4	20	20	15	22	20	27	69
	1876	2	1	18	23	23	7	13	52	72
	Increase, Decrease,	8	3	2	8	8	15	7	25	.....
Sussex	1866	23	26	25	23	.....	63	25	14	102
	1876	7	12	27	41	21	29	26	53	108
	Increase, Decrease,	21	14	2	18	21	34	1	39	.....
Union	1866	17	5	2	1	3	29	2	6	28
	1876	1	3	5	12	12	4	3	26	33
	Increase, Decrease,	16	2	3	11	9	16	1	20	.....
Warren.....	1866	26	13	27	14	5	49	29	7	85
	1876	1	5	27	29	32	13	37	44	94
	Increase, Decrease,	25	8	.....	15	27	36	8	37	.....
Total.....	1866	382	315	283	288	54	821	317	184	1322
	1876	62	108	281	523	534	233	357	918	1508
	Increase, Decrease,	320	207	2	235	480	588	40	734	186

Number of Buildings Erected.

Counties.	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	Total
Atlantic.....	2	1		3	3	3	2	4		2	20
Bergen.....	1		1	3	3	3	2	5	2	7	26
Burlington.....	4	4	4	4	3	4	2	4	3	4	35
Camden.....			1	4	2	2	5	3	4	2	25
Cape May.....		1	2	1		2	2	3	4	1	16
Cumberland.....	2	2	1	5	6	2	5	5	5	5	38
Essex.....		1	4	3	5	7	7	2	3	2	34
Gloucester.....	1	1	2	2	1	2	5	5	1	4	24
Hudson.....	1	1	3	2	5	4	1	2	1		20
Hunterdon.....	5	3	5	3	2	5	9	5	1	5	41
Mercer.....	2	2	5	3	1	2	7	2	2		27
Middlesex.....	3		3	1	4	8	3	4		1	28
Monmouth.....		8	6	1	8	9	5	1	4		43
Morris.....	1	3	3	4	5	12	7	3	1		39
Ocean.....		2		1	9	3	6	5			27
Passaic.....	1	1	3		4	3	4	3	1	1	21
Salem.....	1		2	7	3	3	4	4	4		28
Somerset.....	1	1	1		1		3		1	1	9
Sussex.....	1	5	5	3	5	4		7	1	2	39
Union.....		3		2	3	6	1	3		1	19
Warren.....	1	2	2	5	2	5	2	4	4	2	29
Total.....	27	40	50	57	75	87	79	74	49	44	583

Increase of Accommodations.

Counties.	NUMBER OF ROOMS.				SEATING CAPACITY.			
	1866	1876	Total Increase	Percentage of Increase.	1866	1876	Total Increase	Percentage of Increase.
Atlantic.....	39	71	32	83 per cent.	1,865	4,236	2,371	130 per cent.
Bergen.....	65	115	50	77 per cent.	3,518	7,079	3,561	101 per cent.
Burlington.....	149	195	46	31 per cent.	7,529	10,090	2,561	34 per cent.
Cape May.....	79	178	99	125 per cent.	4,010	9,243	5,233	131 per cent.
Cumberland.....	31	40	9	29 per cent.	1,753	2,320	567	32 per cent.
Essex.....	82	151	69	85 per cent.	4,075	7,703	3,628	89 per cent.
Gloucester.....	190	411	221	116 per cent.	9,434	20,105	11,671	124 per cent.
Hudson.....	76	104	28	37 per cent.	3,861	5,887	2,026	52 per cent.
Hunterdon.....	125	398	273	210 per cent.	7,670	20,781	13,111	158 per cent.
Mercer.....	119	157	38	32 per cent.	5,498	8,023	2,525	46 per cent.
Middlesex.....	92	133	41	45 per cent.	3,831	6,089	2,258	59 per cent.
Monmouth.....	107	152	45	42 per cent.	4,770	7,585	2,815	59 per cent.
Morris.....	129	172	43	33 per cent.	6,993	11,910	5,017	73 per cent.
Ocean.....	110	171	61	56 per cent.	6,808	10,351	3,543	72 per cent.
Passaic.....	35	54	19	54 per cent.	1,722	3,990	2,268	130 per cent.
Salem.....	87	169	82	94 per cent.	5,056	8,815	3,759	74 per cent.
Somerset.....	72	91	19	27 per cent.	3,459	4,750	1,291	38 per cent.
Sussex.....	85	101	18	22 per cent.	7,890	9,527	1,637	21 per cent.
Union.....	115	135	20	18 per cent.	4,628	6,406	1,778	39 per cent.
Warren.....	72	149	77	99 per cent.	3,216	7,348	4,132	130 per cent.
Warren.....	103	150	47	46 per cent.	5,009	8,819	3,810	76 per cent.
Total.....	2060	3397	1337	66 per cent.	101,685	181,977	80,292	79 per cent.

General Statistics.

	1866.	1876.
REVENUE.		
State Appropriation.....	\$ 82,929 69	\$1,338,578 57
Township Tax.....	486,878 14	24,865 31
Interest of Surplus Revenue.....		31,769 46
District and City Tax.....	47,097 17	916,252 18
Total for Support of Schools.....	646,398 06	1,762,596 35
Total for Erection of Buildings.....	47,096 17	548,869 17
SCHOOL CHILDREN.		
Census.....	208,404	312,694
Enrollment.....	130,290	191,731
SCHOOL TERM.		
Schools kept open.....	7 months.	9 mos. 14 days.
VALUATION OF SCHOOL PROPERTY.		
Number of School Buildings.....	1322	1542
Valued at \$100 or less.....	115	36
Between \$100 and \$500.....	548	330
Between \$500 and \$1,000.....	304	378
Between \$1,000 and \$5,000.....	264	546
Between \$5,000 and \$10,000.....	35	94
Over \$10,000.....	56	124
Average Value.....	\$1,639	\$4,085
Total Value.....	\$1,645,000	\$6,205,000
CONDITION OF SCHOOL BUILDINGS.		
Very Poor.....	382	62
Poor.....	315	108
Medium.....	283	281
Good.....	288	523
Very Good.....	54	534
TEACHERS AND SALARIES.		
Males.....	852	946
Females.....	1310	2307
Salary per Month to Males.....	\$39 83.	\$67 65
Salary per Month to Females.....	\$24 25.	\$37 75

ELLIS A. APGAR,

State Superintendent of Public Instruction.

AWARDS OF MERIT.

It will be of no small interest to the readers of this report to premise our State list of awards, with a few observations upon the *system* of awards adopted at Philadelphia, which has at least the merit of novelty; and since in the main it was a decided success, the Board of Commissioners who devised it are fairly entitled to an award of congratulation from the American public. It is peculiarly the "American System," possessing no feature that is traceable to any that has preceded it.

Hitherto the mode of recognizing merit in an exhibit was significant only of an undefined "good" quality. It unfolded none of the characteristics of the article which had been pronounced by an *irresponsible* group of jurors worthy of a medal, thus withholding all that constitutes essential value to the award.

Under the Philadelphia plan, an ungraded medal signified that the exhibitor had received an award. The explanation and what is of real value to the possessor, was embodied in the accompanying report, duly authenticated by the signature of the Examining Judge, with the approval of his associates, whose reputations were involved in the declarations set forth therein. Such an award has intrinsic, tangible value, always available to its owner, whilst a gold or silver medal, a ribboned star or cross, or other token, unaccompanied by authentic practical testimony in behalf of the article demanding recognition, possesses only a conjectural, indefinite value, not to be compared with the other in utility.

To claim that absolute justice is dispensed under any

system of awards resorted to, would presuppose that the agency employed was other than fallible. But the result of what may be regarded as the first attempt at reform in the award system, is conceded to be a success. Its discovered defects may, and no doubt will be, corrected at our next International Exhibition, which ought to be held at our *Constitutional Centennial* in 1889.

STATE DISPLAYS.

New Jersey—The State Centennial Commissioners placed in competition the State Building of New Jersey, and the Judges, after a careful examination of all its parts, awarded it a medal of honor and diploma, with the following report :

“For a State Building erected on the Centennial Grounds, for the use of State Commissioners and visitors, constructed in the old English style of Queen Anne’s time, and covered with tiles manufactured in New Jersey. It is conceded to be the most unique, striking and picturesque building of its class on the Grounds, and especially well adapted to its designed use, and costing about \$12,000. It has been visited by not less than one million of people, one hundred and six thousand of them registered their names, one thousand and seven hundred and ninety-six having registered in one day.”

“Also, for an excellent and interesting exhibit of cereals, soils, stones, iron, zinc and copper of the State, and the complete Geological report of the Survey of the State, with a large wall map, showing in detail all its geological formations.”

MACHINERY.

H. W. & R. Lafferty, Gloucester City,

Machinists, were awarded a diploma and medal for their

“centrifugal machines for draining sugar.” These “four centrifugal machines, with trough and revolving knives, to reduce lumps in mass, outside wall of baskets of corrugated copper; the whole substantially and well made. Also, a screw elevator for soft sugar.”

Danforth Locomotive and Machine Company, Paterson,

Manufacturers of all classes of locomotives, were awarded a medal and diploma for “locomotive and plantation engines.” “One locomotive engine, 4 feet $8\frac{1}{2}$ inches guage, and one plantation engine, 3 feet guage.”

R. J. Gould, Newark,

Machinery, &c., was awarded a medal and diploma for a “dove-tailing machine,” giving “a new method of making dove-tailing, by means of circular saws.”

C. Scofield & Company, Vineland,

Exhibited a “shaft straightener,” that was awarded a medal and diploma “for simplicity, efficiency, and judicious application of power to effect its purpose.”

H. B. Smith, Smithville,

Manufacturer of machinery, was awarded a medal and diploma for “woodworking machinery,”—a “large collection of good serviceable tools.”

T. H. Risdon & Company, Mount Holly,

Exhibited “turbine water wheels,” for which they were awarded a medal and diploma for their “efficiency as regards the arrangement of the guides and gates.”

S. R. Parkhurst, Newark,

Had on exhibition “double cylinder burr pickers,” and was given a medal and diploma “for well constructed burring machines.”

Dr. D. W. H. Calver, Columbus,

Household ironing machine, for which he was awarded a

medal and diploma, for its adaptability and easy application to ironing all styles of garments, with and without buttons, saving time and fuel.

J. & E. Waldron, New Brunswick,

“Wall paper printing machine, and turn-around drying machine,” for which they were awarded a medal and diploma for “a good practical machine, thoroughly well designed and efficiently carried out in all its details. The arrangement supplying the color by a continuous web of sieve cloth answers well.”

Warren Foundry and Machine Company, Phillipsburg,

Exhibited “gas and water pipes” of superior quality, for which they were awarded a medal and diploma for “good workmanship and material.”

William E. Kelly, New Brunswick,

Steam pump, for which he was awarded a medal and diploma. “The arrangement of the pump valves, gives direct water passages, with small clearances, and the general design of the whole pump is neat and simple.”

Joseph Woodruff, Rahway,

Exhibited a “balanced steam damper regulator,” for which he was given a medal and diploma for “an ingenious and effective regulator, possessing the sensibility and range of action of the Clark regulator, with the durability which was wanting in that instrument.”

John P. Gruber, Jersey City,

Exhibited a “liquid elevator and filtering apparatus,” and was awarded a medal and diploma. “The application of atmospheric pressure to raise fluids and accelerate filtration, has been developed in detail, to a very interesting, creditable and useful extent.”

Thomas J. Alcott, Mount Holly,

“Turbine water wheel,” for which he was given a medal and diploma for “ingenuity and good workmanship.”

Jesse W. Starr & Son, Camden,

Exhibited a fine display of “gas and water pipes, stop valves and fire hydrant castings,” and were awarded a medal and diploma for having “great variety, good casts and materials.”

Silas Walton, Moorestown,

“Turbine Water wheel,” for which he was awarded a medal and diploma for “excellence of design as regards the coincident regulation of the guides and wheel buckets.”

J. A. Grosvenor, Jersey City,

Exhibited a “Pulsometer steam pump,” for which he was awarded a medal and diploma. “This pump is tastefully designed, and of simple and cheap construction. The absence of pistons makes it well adapted for moving fluids charged with gritty substances.”

William Johnson, Lambertville,

For a “Lathe chuck,” that is “substantial, original and ingenious,” was awarded a medal and diploma.

Clough & Williams, Newark,

Manufacturers of “Machines for making cork handles of wire,” and were awarded a medal and diploma. “These handles are a new article of manufacture, and the machine which produced them at the rate of thirty-two per minute, is distinguished for great originality and ingenuity, and is to be commended for these features.”

Bolen, Crane & Company, Newark,

Exhibited a compound hydraulic press and were awarded a medal and diploma for the “simplicity and efficiency of the invention.”

Oberlin Smith & Company, Bridgeton.

"Machines for working tin plate," were recommended by the judges for a medal and diploma "for sound construction and complete bearing surfaces. These machines are characterized throughout with much ingenuity in details, and they are severally adapted for their special purposes."

George H. Dowden, Newark,

A "burglar alarm and automatic annunciator," for which he was awarded a medal and diploma. The judges' report says, "the apparatus, by an electric contact, for ringing a bell when a window or door is opened, and making on an annunciator the number specifying the exact place of disturbance, is substantially effective. The bell thus started automatically is kept ringing until heard and stopped."

Singer Manufacturing Company, Elizabeth,

"Family sewing machines," for which they were awarded the highest honor, and a medal and diploma, with the subjoined report of the judges: "A shuttle sewing machine, embodying the following points of construction, viz.: a needle bar operating directly from the end of a rotating shaft in the overhanging arm; a shuttle supported in a shuttle carrier, moved transversely to the feed by means of a crank on a rotating shaft; a four motioned position feed and straight needle, with its eye parallel with the direction of the feed."

"A superior family shuttle machine, embodying the greatest number of improved mechanical devices to impart positive motion to the various parts. Commended for simplicity of construction, good workmanship, excellent quality of work done, originality and completeness of display."

Singer Manufacturing Company, Elizabeth,

Sewing machines for stitching buttonholes. They were

awarded a medal of honor and diploma for a "sewing machine, specially adapted to stitching buttonholes in leather and clothing. The materials to be stitched being held in automatically moving clamps that present the edge of the buttonhole to the action of the needle, the latter reciprocating in a laterally moving head." The judges commend this ingenious machine for "quality and quantity of work, automatic action, good workmanship and originality."

Prof. Robert H. Thurston, Stevens Institute of Technology, Hoboken,

Exhibited a "machine for testing strength of materials," and he was awarded a medal and diploma. "The machine is built on exact scientific principles, and makes an automatic record of experiments to test strength, elasticity, ductility and homogeneousness of materials."

Fred. Meyer, Newark,

Manufacturer of weighing scales, was given a medal and diploma for "hay, coal, and stock scales, portable, platform and grocers' counter scales, which are made in a superior manner. The seamless scoop is likewise a valuable improvement."

Lowerre & Yucker, Newark,

Exhibited a fluting machine, and received a medal and diploma for the "beauty of design and finish, also, adaptation for the purpose intended."

Clark Thread Company, Newark,

Extensive manufacturers of spool cotton, exhibited a self-acting multi-spool winding machine, for spooling thread and cotton, and they were awarded a medal and diploma for "originality and excellence of invention, fitness for the purpose intended, good construction and accurate working of machine, resulting in a superior quality, and great economy of winding."

Fisher & Norris, Trenton,

Exhibited double screw parallel vise, for which they were awarded a medal and diploma. The vises and anvils exhibited "are of very good material and workmanship."

Atlas Manufacturing Company, Newark,

Exhibited wool burring machines, for which they were awarded a medal and diploma for machines having "rapid and effective action."

Cooper, Hewitt & Company, New York,

Works at Trenton, New Jersey, exhibited wrought iron beams, bars, chains and wire, for which they received a medal and diploma for "very good quality and finish of all the exhibits. Beams of considerable dimensions, special attention being called to the quality of the gun screw iron."

CUTLERY, CASTINGS, BRASS, STEEL, SILVER, &C.

R. Heinisch & Sons, Newark,

Manufacturers of cutlery and shears of all kinds, were awarded a diploma and medal for a display of tailor's shears and scissors, malleable handles. Commended by the judges "as of the best quality and finish."

J. Wiss, Newark,

Shears, scissors, shoe knives and pruning shears, diploma and medal was awarded for "fine finish and excellent material."

William Johnson, Newark,

Manufactures carpenters' mechanic tools and other hardware, for which he was awarded a diploma and medal.

P. Lowentraut, Newark,

Manufactures calipers, compasses, hammers, punches and shoe rasps, for a display of which he was awarded a diploma and medal.

Fisher & Norris, Trenton,

"Anvils and vises," "commended as being of excellent quality," and were given a diploma and medal.

American Saw Company, Trenton,

Manufacture "mill and cross-cut saws," that the judges pronounced "well finished and well adapted for use." The display was awarded a diploma and medal.

M. Gould's Sons, Newark,

"Stair rods and dog collars." These "were handsomely finished and of beautiful style," and received a diploma and medal.

D. M. Meeker & Son, Newark,

Manufacturers of brass and malleable iron, and other castings, the display of which "were excellent in quality and finish," and received a diploma and medal for these merits.

Henry Roberts, Newark,

Steel wire, "commended for good quality," and was awarded a diploma and medal.

Adirondack Steel Works, Jersey City,

"Steel ingots and forging." The display was awarded a diploma and medal, and commended "for a good exhibit and good workmanship of forging."

Joseph Wharton, Camden,

"Ores of nickel and cobalt, and result of their treatment." Was awarded a diploma and medal for "a fine collection of nickel ores manufactured, both cast and wrought, cast cobalt, electro-plating with nickel and cobalt, and salts and oxides of both metals—the whole showing a remarkable progress realized in their metallurgical treatment."

New Jersey Zine Company, Newark,

Spiegel-eisen. Awarded a diploma and medal "for good quality."

Esterbrook Steel Pen Manufacturing Company, Camden,

Manufacturers of steel pens, were awarded a diploma and medal for pens of "excellent and uniform quality, great variety and low price."

John A. Roebling's Sons' Company, Trenton,

Wire rope rigging of "great excellence of materials and workmanship," for which they were awarded a diploma and medal by the Board of Judges.

American Saw Company, Trenton,

"Exhibited pinching, shearing and pressing machines." The judges' report says: "This company exhibits several machines for pinching, shearing, and pressing metals, which contain several points of marked originality and ingenuity. These machines are well designed, and perform their work in a very satisfactory manner." They also showed "Moveable toothed circular saws," which received an award "for high finish, and the method of inserting detached teeth."

H. T. Harvey, Newark,

Was awarded a medal and diploma for "brushes." These are, according to the judges' report, "excellent articles for the purposes intended. Made of a very good quality of steel wire, making an effective and durable brush."

Fortenbach & Sons, Carlstadt,

Manufacturers of choice silver watch cases, for which they were awarded a medal and diploma, and recommended by the judges for "varied styles, made by machinery and die work. The bezel without soldering, showing excellent and durable work, with tasteful ornamentations."

Romer & Company, Newark,

Exhibited brass and iron pad-locks and rim locks, for which they were awarded a medal and diploma, as "beautiful and well gotten up work."

Trenton Lock and Hardware Company,

Had on exhibition rim, mortise, pad, till, car and safe locks, and received a medal and diploma for "superior quality and workmanship."

H. F. Hawrey, Newark,

Exhibited tube and flue brushes, for which he was awarded a medal and diploma, and the judges' report says "these are excellent articles for the purposes intended. Made of very good quality of steel wire, well secured, making an effective and durable brush."

SADDLERY HARDWARE.

H. F. Osborne, Newark,

Saddlery hardware manufacturer, was awarded a diploma and medal for "machines for splitting leather and rounding hand reins and traces," which were "well constructed and useful machines."

Crane & Company, Newark,

Harness and saddlery hardware manufacturers, were given a diploma and medal for a fine display of their goods, among them "the flexible rubber bits, which were well made, and seemed to fill a much needed want for a soft and safe bit."

Charles M. Thebereuth & Brother, Newark,

Saddlery hardware and harness trimmings, were awarded a diploma and medal for a display of their goods, "elegant and artistic in work."

C. S. Osborne & Company, Newark,

Manufacturers of saddlery hardware, were awarded a diploma and medal for a fine display of "saddler's and harness maker's tools."

Samuel E. Tompkins & Company, Newark,

Manufacturers of saddlery hardware, silver plated coach and harness ware, saddle trees, &c., &c., were given a diploma and medal by the judges for "silver plated coach and harness hardware, for good and useful general work."

August Buermann, Newark,

Saddlery and harness hardware, for which was awarded a medal and diploma for "an assortment of Mexican bits and spurs, well made, and excellently suited to the countries in which they are intended to be used."

CARRIAGES, WAGONS AND WHEELS.

Phineas Jones & Company, Newark,

Manufacturers of all descriptions of carriage, heavy wagon and sulky wheels, were awarded a diploma and medal for a fine display of a full assortment of their work, which was "of the very best material, and put together in a workmanlike style."

Coles & Ballard, Newark,

Manufacturers of children's carriages and velocipedes, were given a diploma and medal for "a variety of good models, that were well made."

John Urmston, Rahway,

Manufacturer of hubs, was awarded a diploma and medal for a display "of well made hubs."

Hetfield & Jackson, Rahway,

Carriage manufacturers, were awarded a diploma and medal for a sulky "having great strength, superior workmanship, and adaptation to the track."

Union Manufacturing Company, Elizabeth,

Manufacturers of wheels, were given an award of a diploma and medal for a "nice exhibit of a stock of wheels."

SILK, COTTON, WOOLEN AND FUR GOODS.

Weidman & Greppo, Paterson,

Manufacturers of dyed silks, for which they were awarded a medal and diploma for "excellent production of black and colored dyed silk, comparing well with the best European establishments."

S. M. Mayenberg, Paterson,

Exhibited silk and upholstering satins, and received a medal and diploma for "well made millinery silk and upholstering satins of superior quality and finish; also, for ladies' scarfs of excellent color and design."

Frederick Baare, Paterson,

Exhibited silk goods, and were awarded a medal and diploma for "black figured silks made in an approved and superior manner; also for twenty-six inch millinery goods of good manufacture."

Hamil & Booth, Paterson,

Manufacturers of plain and figured silks, and received a medal and diploma for "a very fine exhibit of figured dress and millinery silks, plain satins, serges, and silk ribbons of excellent manufacture and material."

B. B. Tilt, & Son, Paterson,

Exhibited figured silks and silk looms, and received a medal and diploma "for brocade silks and handkerchiefs of superior quality and workmanship, excellent in color and style; also for a Jacquard ribbon-weaving loom and a figured silk loom, both of good construction."

Barbour Flax Spinning Company, Paterson,

Exhibited flax thread and yarn, for which they were awarded a medal and diploma for "excellence in quality and color of threads and general utility of product."

Gloucester Gingham Mills, Gloucester City,

Manufacturers of gingham and dress goods, and were awarded a medal and diploma for "good quality and design."

G. Dewitt, Bro. & Company, Belleville,

Ventilated elastic breast pads, fine brass wire thread and wire cloth, for which they were awarded a medal and diploma for "excellence in material, flexibility with combination of brass wire and cotton threads, utility and economy—one coil of brass wire five miles long, weighs *one* pound; wire cloth ten thousand meshes per inch."

William Crabb, Newark.

Manufacturer of hackler's card, clothing, wool combs, picker-teeth, comb-pins, gills, etc., etc. He was given a medal and diploma for "superior quality and utility of all the articles exhibited."

R. D. Wood & Company, Millville,

Exhibited calender for cotton goods, for which they were awarded a medal and diploma for "good workmanship, material, and fitness for intended purpose."

George Statford, Jersey City,

Oakum, for which he received a medal and diploma for "excellent quality and softness of texture."

Camden Woollen Mills, Camden,

Exhibited cotton warps, repellants and flannels, for which they were awarded a medal and diploma.

William Strange & Company, Paterson,

Exhibited ribbons, and received a medal and diploma for "an extremely fine exhibit of plain and fancy ribbons, of good materials, well made in every respect; also, sash and millinery ribbons of great variety and superior quality."

Wortendyke Manufacturing Company, Wortendyke,

Exhibited "cotton lamp wicking," for which they were awarded a medal and diploma for good quality and softness of their product.

Robert Adams, Paterson,

Manufacturer of dyed mosquito netting, and was awarded a medal and diploma for "smoothness and strength, brightness and evenness in coloring."

B. Mills & Sons, Jersey City,

Exhibited oakum, and received a medal and diploma for "superior quality, well tarred and evenly packed."

Yates, Wharton & Company, Newark,

Manufacturers of hats, for which they were awarded a medal and diploma for "good style and workmanship, and economy in cost."

Duryee & Halbet, Rahway,

Exhibited raw, picked, dressed and domestic dyed seal furs, and received for the same a medal and diploma for "skill and general utility."

Norfolk and New Brunswick Hosiery Company, New Brunswick,

Manufacturers of underwear for ladies, gentlemen and children, and received a medal and diploma for the "high grades of materials used, excellence in fashion and general finish."

W. H. & R. Burnett, Newark,

Exhibited furs and opera cloaks, and were awarded a medal and diploma for "good patterns, rich variety and good material."

James Short, New Brunswick,

Exhibited carpet loom, and received a medal and diploma for "a tapestry carpet loom, with an ingenious crank motion."

Dale Manufacturing Company, Paterson,

Manufacturers of silk, mohair and fancy braids, were awarded a medal and diploma for "a very fine display of silk and mohair braids, fancy cords and trimmings of great beauty and excellent workmanship."

John D. Cribber & Company, Paterson,

Sewing silk and silk machines, were awarded a medal and diploma for "black and colored sewing silk, and machine twist, excellent in every respect, and particularly distinguished for the great regularity attained through the new system for grading the sizes. The machine exhibited for the purpose of spooling and measuring the silk is of ingenious construction and good workmanship."

BOOTS, SHOES, LEATHER AND RUBBER WORK.**Banister & Tichnor, Newark,**

Manufacturers of hand and machine sewed boots and gaiters in extensive variety, both in style and material. They were awarded a diploma and medal for their fine display of 207 pairs of boots, shoes and gaiters by the Jury of Awards for their exhibit of "hand stitched (team) and machine sewed boots, shoes and gaiters," "for the extent and variety of their exhibit, and excellence and uniformity in the fitting and buttoning of the work, the proper proportions of their shoes and forms of their lasts, made in their own factory."

M. B. & J. Canfield, Newark.

Boot and shoe manufacturers, in great variety and exquisite styles. They were given a diploma and medal for their display of "men's hand stitched team work." "An excellent display, consisting of men's double inseam, cork soles, morocco leg tongue, patent leather boots, well cut and nicely lasted, with a variety of other styles to suit different

sections, with box and plain toes, excellent material and workmanship."

S. Halsey & Son, Newark,

Manufacturers of patent and enameled leather, were awarded a diploma and medal for an extensive display of "patent and enameled leather for carriages, harness and shoes, and oil top leather. The carriage leather, comprising enameled landau trimmings, buggy top, calash, long grain boot and belt leather, all excellent workmanship and notable for skill in production."

T. P. Howell & Company, Newark,

Manufacturers of patent leather in variety, were awarded a diploma and medal for their choice exhibit of this product, which was made up in part of the "patent leather, of split sheeting, Winker's bow and trimmings, and collar leather." The latter is notable for strength and thoroughness of finish, and all "exhibit high skill and workmanship in its production, and show notable excellence in its manufacture."

T. B. Peddie & Company, Newark,

Trunk, valise, bag and strap manufacturers, were awarded a diploma and medal for their "large and varied exhibit, excellent in style and workmanship."

Edward Simon & Brother, Newark,

Manufacturers of trunks and bags, for their exhibit of which they were awarded a diploma and medal for "good quality and workmanship in view of price."

J. Lagowitz & Company, Newark,

Manufacturers of trunks, valises, bags, &c., for which they were awarded a diploma and medal for a "large assortment, good workmanship, and moderate cost."

Miller, McCullough & Ober, Newark,

Manufacturers of hand stitched boots, made a handsome

display of "men's hand stitched team or gang work for wholesale," for which they were awarded a medal and diploma, and the Judges' report says: "A small but very creditable display, calf dressed, walking, double soled, fisherman, high and morocco leg tongue boots, with a variety of styles and widths to suit different sections; good form, material and workmanship."

S. Adger Darrack, Newark,

Exhibited rawhide apparatus for spinal curvature; also hip, knee, joint and bow leg apparatus, for which he was awarded a medal and diploma "for originality of the use of the materials, ease and perfection. They can be moulded to deformed shapes; also for the simple, firm and effective mode in which the proper and needed force can be applied in any direction."

W. O. Davey & Sons, Jersey City,

Exhibited "binders, trunk and box boards," for which they were awarded a medal and diploma for the "boards, were hard, tough, and smooth."

Mrs. R. E. Jenkins, Bordentown,

Exhibited dolls' slippers, and received a medal and diploma for "good finish."

New Brunswick Rubber Company, New Brunswick,

Manufacturers of rubber boots and shoes, and were awarded a diploma and medal for these products that were "excellent in style and finish, good quality and workmanship."

HARNESS AND HARNESS TRIMMINGS.

Andrew Albright, Newark,

Manufacturer of hard rubber coated harness and carriage trimmings, was awarded a diploma and medal for his dis-

play, which, according to the judge's report, contained "originality and fitness for the purposes intended, fine workmanship and finish." A second display from the same manufacturer was recommended for a special award on account of "very good work, artistic designs, nicely and richly furnished."

Peters & Calhoun Company, Newark,

Manufacturers of light and heavy harness, riding saddles, &c., &c., were awarded a diploma and medal for "Mexican riding saddles of very fine workmanship, handsome, and elegant of the kind."

Parkhurst & Gridley, Newark,

Manufacturers of book and shawl straps, "joint and miter planer, cord racks, music holders," &c., &c., were awarded a diploma and medal for their *shawl and book strap*. "An entirely new article, that wholly abolishes the use of buckles and tuck straps by the use of studs and protecting caps."

Christolph Sippel, Newark,

Manufacturer of "fancy carriage trimmings," was given a diploma and medal for "fancy handles and cord cases for carriage trimmings," that "were well made and useful articles."

AGRICULTURAL IMPLEMENTS.

William Farr Goodwin, Stelton,

Inventor of a new movement for working mowing machines, (reciprocating screw,) was awarded a diploma and gold medal for his machine, after a severe field trial before the Board of Judges.

A. C. Colton, Vineland,

For an adjustable scuffle hoe, a diploma and medal. Also,

for a "stump and stone extractor," that was ingenious, efficient, simple and durable.

P. J. Stryker, New Brunswick,

Was awarded a diploma and medal for a "self-loading excavator," having practical merit, and is a useful implement.

Joseph R. Mount, Hightstown,

For a "champion hay conveyer," was awarded a diploma and medal for simplicity in construction, ease of motion, effectiveness in accomplishing the work.

Munsel & Dexter, Elizabeth,

Were given a diploma and medal for a "lever jack," being strong, durable, and easily worked.

Peter Lynch, Mount Holly.

Was awarded a diploma and medal for a "hog scalding tub," "of intrinsic value."

Harris Brothers, Elizabeth,

A diploma and medal for "smut and scouring machine," "of simple construction, and well adapted to its use."

Hon. Theodore F. Randolph, Morristown,

Exhibited in Agricultural and Machinery Halls, on the Centennial grounds, and also in open field trials before the Board of Judges, "Randolph's ditching machine," of different sizes, all of which, when put to the practical test, accomplished more than their owner and inventor claimed. After several field tests the judges gave the following written testimonial, accompanied with a special Centennial medal, for the superior excellence of the working of the machine—

"As an ingenious and efficient machine for draining or ditching purposes." "The two horse power machine is well suited for draining operations, cutting out tile ditches five

inches wide and thirty inches deep, thereby effecting a great saving over manual labor. The larger machines have still greater labor saving power. A machine drawn by six horses will cut ditches from twelve to thirty inches in width, and from thirty to forty inches deep. A cut six inches deep and twelve inches wide can be made as fast as horses can walk. The machine can also be worked by a traction engine, or by stationary steam power." Signed by the judges.

POTTERY, PIPES AND EARTHENWARE.

American Crockery Company, Trenton,

Exhibited white granite wares, and received a medal and diploma for "good quality of body and glaze, decorations neat, and effect satisfactory."

Joseph H. Moore, Trenton,

Manufacturer of white granite table wares, biscuit and Parian, for which was awarded a medal and diploma for "good quality of glaze of granite ware, biscuit flowers in relief, delicately modeled."

Isaac Davis, Trenton,

Had on exhibition, of his own manufacture, white granite, granite wares, and received a medal and diploma for "good quality of body and glaze, and for fine blue color; also, for improvement in avoiding the too frequent clumsiness of this ware. Some pieces are thin and delicately formed."

Glasgow Pottery Company, Trenton,

White granite wares, for which they were awarded a medal and diploma for "good quality of body and glaze, good pen gilding."

Ott & Brewer, Trenton,

Manufacturers of white granite wares and Parian figures,

received an award of a medal and diploma, for "good quality of body and glaze of granite ware, figures in Parian, new designs in toilet ware, general attention to designs."

Mercer Pottery Company, Trenton,

Exhibited white granite ware and gilded decorations, and was awarded a medal and diploma for "good quality of body and glaze, successful gilding and decorations."

A. Hall & Sons, Perth Amboy,

Manufacturers of white, black, and fire bricks, of very superior quality. They were awarded a medal and diploma for "earth ware of hard, compact body, with rich colored glaze. White brick for building purposes, that *will not discolor*, by turning green or yellow; good quality of fire brick."

William Young's Sons, Trenton,

White granite table wares and C. C. wares, for which they received a medal and diploma for "good quality of body and glaze."

Astbury & Maddock, Trenton,

Exhibited sanitary earthenware, and they received a medal and diploma for good quality and fitness for the purposes."

John Ambuster, Camden,

Had on exhibition a section of masonry, laid with hand-pressed bricks, with a fancy band. A medal and diploma was given "for ingenious and skillful workmanship and pleasing results, due to the peculiar bond employed. These bricks are of superior quality and finish."

C. W. Boynton, Woodbridge,

Manufacturer of vitrified drain and sewer pipes, &c., &c., received a medal and diploma for his display, and "all the goods have a good bole and well fired, strong and durable and exceptionally meritorious."

FINE ARTS, DRAWING, SKETCHING AND EDUCATIONAL.

Thomas Moran, Newark,

Had on exhibition in the American Department of the Art Gallery, the following named oil paintings, which were, according to the verdict of the best art critics, among the most meritorious and noted in the American display, in coloring and perspective: "The Mountain of the Holy Cross;" "A Dream of the Orient;" "The Valley of the Rio Virgin, Utah;" "Fiercely the Red Sun Descending," from Longfellow's *Hiawatha*. Also, six illustrations in india ink, from *Hiawatha*. The group of Judges awarded the artist a medal of honor and diploma "for excellence in landscape painting."

State Normal School, Trenton,

Had on exhibition Laboratory, map drawing from memory, and Herbarium, for which a medal and diploma were awarded for "excellence of work done and evidence of progress."

John Reid, Paterson,

Photographs, for which he was awarded a medal and diploma "for good photographs of bridges and engines."

M. W. Dalrymple, ———,

Exhibited "charts, drawings and water color paintings, illustrations of natural history." These received an award of a medal and diploma, "and show extraordinary zeal and industry in scientific studies."

Rutgers College, New Brunswick,

Exhibited "documents and students' work," "varied and interesting," for which the Judges gave an award of a diploma and medal.

State Department of Public Instruction, Trenton,

State Collective Exhibition, for which the Judges awarded

a medal and diploma, "for being very full and comprehensive, including specimens of work done in every grade of public schools, as well as interesting exhibits from Rutgers College and the College of New Jersey. This exhibition possesses the singular merit of showing scholars' work from 96 per cent. of all the school teachers of the State, and 400 photographic views of school buildings."

Board of Directors of Education, Jersey City,

Was given a medal and diploma "for scholars' work and cabinet specimens, for quite a large and creditable exhibit as a whole."

L. D. Sibbey & Co., Vineland,

Exhibited stereoscopic album and stereoscope, and were awarded a medal and diploma for having several desirable features among them: "pictures are easily turned up, and not liable to injury from contact and friction, as the joints are very firm."

Joseph Schedler, Jersey City,

Exhibited "celestial and terrestrial globes and raised maps," for which a medal and diploma were given for "excellence of work, delicacy of finish, and accuracy of adjustment."

Stevens Institute of Technology,

The exhibit of the Stevens Institute of Technology was arranged with the view of illustrating the following points:

1st. The methods of instruction employed, as illustrated by instruments, models, &c.

2d. The results obtained, as shown by work produced by students.

3d. The contributions to the progress of science, as shown by apparatus used in original investigations, new substances discovered or prepared, and published papers.

1st. The illustrations of methods of instruction comprise an extensive and well selected collection of instruments of

precision, such as linear dividing engine, cathetometer, goniometer, sperometer, polariscopes, spectroscopes, galvanometers, resistance coils, rheostat, apparatus of Dalton, Gay Lussac, Dumas and Regnault, for heat determinations, &c., &c.

Also, as exhibiting the means of illustration employed in giving oral instruction, a large number of Oliver and Schroeder models, illustrating problems in descriptive geometry, and numerous models of elements of machinery, such as gear wheels, journals, couplings, cams, pulleys, various methods of transferring or transforming motions, and the like, together with models of entire machines, such as marine and stationary engines, water wheels, pumps, cranes, &c., &c. Likewise, for the same purpose of illustrating oral instruction, several forms of apparatus for optical projection of various phenomena on the screen, such as the lantern for vertical projection, for polarization, for spectroscopic projection, and the like. *

2d. The results obtained, as expressed by the work of students, are illustrated in the first place by a large number of designs and working drawings, among which we may specify the following as of special merit: The friction governor, by Mr. P. P. Poinier; the odontoscope, by Mr. J. Mather Wallis; elliptical gear wheels, by Mr. P. Raquéé; Whitworth velocity diagram, by Mr. A. Riesenberger; propeller, by Mr. B. P. Dow.

None of these drawings, as we are informed, are in any sense copies. The conditions being given, the work was planned, calculated, and executed by the student, exactly as if on active duty.

In the same category come various machines and instruments constructed by students, among which may be noticed the autographic testing machine, built by the various members of the class of '76; the oil testing machine, constructed by the members of the class of '77; the model of the two

tangent hyperboloids and of the epicycloid and hypocycloid, as used in toothed gearing, designed and built by Mr. V. Bachmann; also, a vertical attachment for the lantern, two large and highly finished lanterns for projections of all sorts, with numerous attachments, regulators for the electric light, chromatropes, spectroscopes, a microscope, and all sorts of blow pipe apparatus, the work of various students, during the last three years.

3d. Illustrations of the contributions to science made by the Stevens Institute of Technology during its six years of existence. Among these we notice,

A spectroscope with various attachments, illustrating Pres. Morton's researches on the fluorescent and absorption spectra of Uranic salts.

A series of specimens of thallene and its derivative, illustrating the discovery and investigation of that body by President Morton.

Induction coil, rotating apparatus and perforated disc, illustrating Professor Mayer's researches on the composition and duration of the electric spark.

Resonator, fork, rotating disc, &c., illustrating Professor Mayer's research on the persistence of auditory impressions.

Specimens of wood and metal, and autographic strain diagrams illustrating Professor Thurston's researches, made with his testing machine.

We also find several piles of books and pamphlets, containing the published accounts of these and other investigations made at the Institute. A simple list of these occupies nearly eight pages octavo of printed matter.

The judges, in their report on the exhibit of this institution of learning, awarded it a medal of honor and diploma, and "commended it for completeness in appliances and thoroughness in its course, as evidenced by the character of the work produced by its students, consisting of designs,

drawings, and finished machines and instruments. It is also entitled to consideration for the numerous original investigations which it has enabled its various professors to pursue, and which are represented by the published papers, and, when practicable, by specimens exhibited."

Professor Samuel Lockwood, Freehold,

Monmouth Ethnology, for which he was awarded a medal of honor and diploma, the "collection, being one of much interest, is deserving of notice for the reason that it was formed by a teacher with the co-operation of his pupils, and that it relates to a small portion of the country which can be most profitably visited, observed and studied by such a school."

Francis C. Lowthorp, Trenton,

Exhibited photographs of iron bridges and turn tables, and plans of wrought iron bridges and models of details, for which he was awarded a medal and diploma for "work useful in form and design, and of good method of construction of the loose ring for swing and pivot bridges. This engineer has in many cases made the parts of his bridges under compression of cast iron, using wrought iron for those parts subject to extension, a method which has been adopted in many cases in Europe, but is now much less used than formerly, engineers generally preferring to make their trusses wholly of wrought iron. There are, however, in England, bridges in which cast iron is used for compressed strains, over which the heaviest railway traffic has been passing for forty years."

CATTLE, HORSES AND SWINE.

William S. Taylor, Burlington,

A breeder of pure blood Jersey cattle, was awarded the diploma and Centennial medal for cattle of this breed,

ranking high in the standard of excellence. The cows "Emily Hampton," "Rene Ogden," and "Favorite of the Elms" and the young bull "Nobleman" received high commendation from the Judges.

Silas Betts, Camden,

Was awarded a diploma and medal for his Jersey bull "Rioter" and Guernsey heifer "Princess."

Charles H. Muirheid, Titusville,

Guernsey bull "Milfred," and cow "Test" were awarded a diploma and medal, and also favorable mention from the Judges.

J. C. Van Fliet, Newark,

Was awarded a diploma and medal for a pair of closely matched carriage horses, "Tom" and "Jerry."

Charles Williams, Summit,

A diploma and medal for a fast walking horse, "Molly Weaver."

Whitenack & Hall, Somerville,

Awarded a diploma and medal for a superior roadster stallion, nine years of age.

H. N. Smith, Trenton,

Breeder of blooded horses, was awarded a diploma and medal for his "Ross Thorne" filly and "Musician" colt, both of which were superior young animals, and give promise of fine style and action.

Charles S. Taylor, Green Hill Stock Farm,

Breeder of heavy draught horses, was awarded a diploma and medal for his Clydesdale stallion colt "Sampson" and mare of the same breed, "Mayfield."

Charles S. Taylor, Burlington County,

Was given a medal and diploma for his Berkshire sow, "Gem of Gloucester;" ditto, for "Gem of Gloucester the

Second," and sow "Cantilena," and for the boar "Gloucester's Liverpool;" all of these were very superior animals of the breed, and were highly commended by the Judges.

W. H. Cole, Clinton,

A breeder of swine, was awarded a diploma and medal for Yorkshire swine "Princess," "Lady Hambrook," "Ellsmere Girl" 1st, 2d and 3d, and "Flora;" also for Yorkshire boars, "King William" and "Duke;" all of these were superior animals.

HORTICULTURE.

George Such, South Amboy,

Propagator of hot house, green house and decorative foliage, plants, &c., &c., exhibited specimens of ferns, rare sorts, in fine condition, of healthy growth. "A collection of superb plants containing specimens of the latest introduction and rarest kinds, specially notable in regard to luxuriant growth, great merit in cultivation, superior collection of rare *agaves* and for unique display, illustrative of the best material for sub-tropical gardening."

A. Hance & Son, Red Bank,

Nurserymen and florists, a unique exhibit of selected evergreens and deciduous trees of novel and peculiar characteristics; notably fine variegated forms, drooping or pendulous varieties, and other striking forms; very choice collection of highly ornamental trees and shrubs.

H. H. Rusby, Essex County,

Herbarium containing the Flora of Essex county, awarded the highest testimonial on account of its intrinsic and scientific worth.

Egg Harbor Agricultural Society,

Seven varieties of grapes of "unusual excellence in size, color and flavor, and being uniformly ripened."

A. H. Richards, Pleasant Hills,

Cranberries of "superior size," solidity and general excellence.

Fruit Growers' Trade Company, of New Jersey,

A remarkably instructive display of a leading American industry. Plants were exhibited in their wild condition; others, as improved by cultivation. It was a complete exhibit of improved cranberry culture, for which was given a medal and diploma.

J. H. Wethington, South Amboy,

"Albany Seedling Strawberries, of remarkable size."

Thomas J. Beams, Morristown,

"Four varieties of melons, large size and fine flavor."

Gibson & Bennett, Woodbury,

"An instructive and commendable collection of early apples."

E. D. Sturtevant, Bordentown,

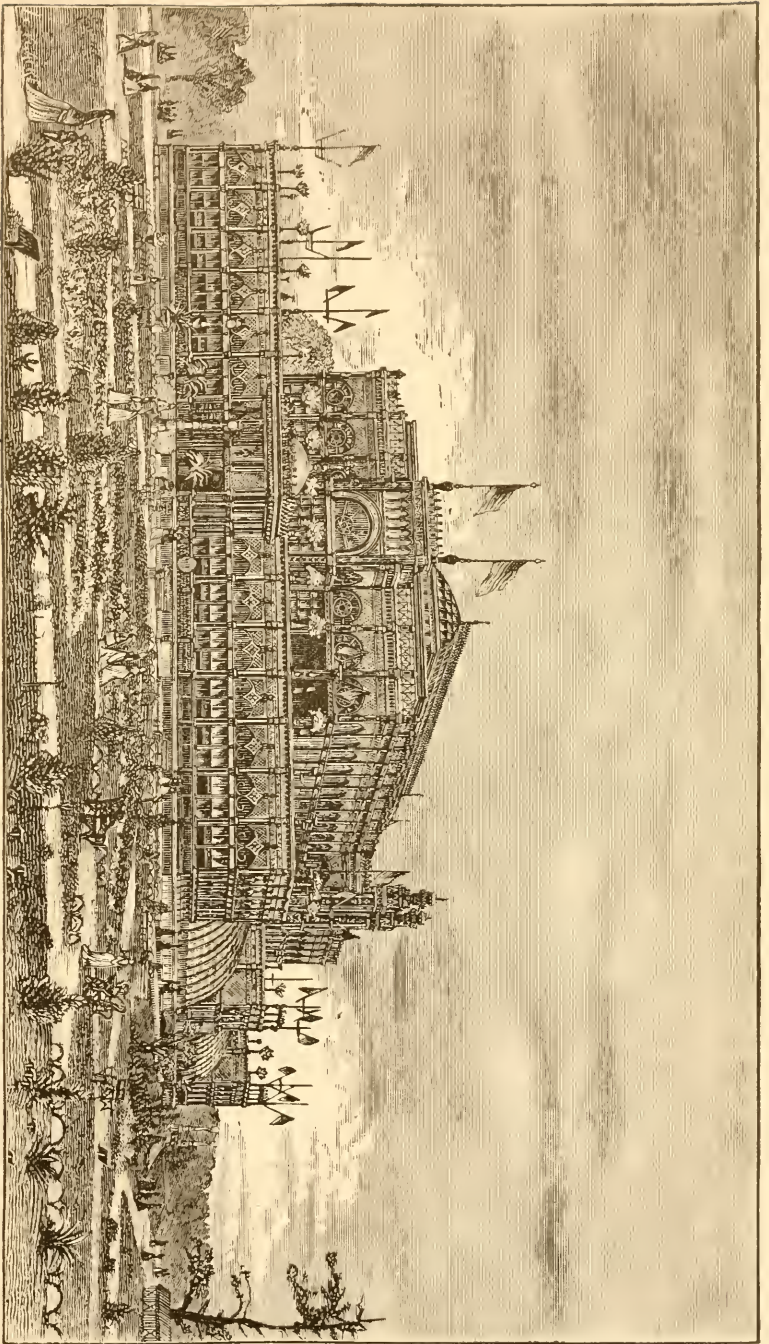
Exhibited "choice collection of hot house plants."

Russel Austin, Camden,

"Cranberry plants, taken direct from their native places, and making a bed on the Centennial grounds, which grew perfectly, which also establishes the fact there is no upland variety."

State of New Jersey,

A collection of woods and timber of the State, which was spoken of in the Judge's report favorably "for completeness and the manner of exhibition. There were 120 species shown in triplicate specimens, showing the vertical, transverse, and diagonal finish." The collection was awarded a medal and diploma.



HORTICULTURAL MALL.

John S. Collins, Moorestown,

“Fine specimens of Wilson and Kittatinny blackberries, and Brandywine raspberries.”

E. W. Durand, Irvington,

Propagator of seedling strawberries, was awarded a diploma and medal for “nine new varieties of strawberries, most of which were of very large size and beautiful color.”

Peter Henderson & Company, Jersey City,

Exhibited a large collection of florists' supplies, for which they were awarded a medal and diploma. A “very full, unique display of florists' supplies, and articles in use in flower decorations.” Also, for decorative and foliage plants. “A collection of geraniums, or pelargoniums, embracing 250 varieties of the best single and double kinds of zonule and variegated forms, rarity and great variety; also, a fine and extensive collection of verbenas.” A third exhibit of decorative and ornamental foliage plants, arranged in a “circular bed of coleus and similar leaved plants, producing a fairly good effect in its line of treatment.” Another “circular bed of large leaved decorative plants—a very effective design, details well developed. The whole highly ornamental.”

PAPER WARE.

Bennet Osborn, Newark,

Exhibited paper boxes, for which he was awarded a medal and diploma for “originality, utility and adaptation to the public wants.”

French Paper Ware Company, Springfield,

Was awarded a medal and diploma for “paper ware.” “The exhibit contains water pails, wash bowls, slop jars,

flower pots, &c., &c. They are strong, light, tough, and of good finish."

McNeil, Irving and Rich, Elwood,

Exhibited "Building paper," and received a medal and diploma. Their exhibit consist "mainly of water-proof building paper; it is very thoroughly sized, and resists the action of water, is strong and durable, and well adapted to a great variety of useful purposes."

Ivanhoe Manufacturing Company, Paterson,

Manufacturers of all grades of paper, received a medal and diploma for their extensive display. This exhibit, according to the Judges' report, contains "thin super calendered book paper, both white and toned, white and colored folios, known as French folios, and copying paper. The thin book papers are amongst the best on exhibition. French folios remarkable for all the desirable qualities in such papers, viz., beauty, finish, strength, good sizing, and the copying paper of remarkably good color and finish, and the best white paper of its kind of exhibition."

DOMESTIC GOODS.

Beckhow Preserving Company, Paterson,

Exhibited salad cream, tomato catsup, chow-chow and pickles; and received a medal and diploma for the same.

Kenyon & Brothers, Raritan,

Had on exhibition meat choppers, for which they were given a medal and diploma.

Anderson & Campbell, Camden,

Exhibited preserved vegetables, and were awarded a medal and diploma for "careful packing, flavor and form, and well preserved."

Adam Exton & Company, Trenton,

Manufacturers of water, butter and oyster crackers, received a medal and diploma for the same, for "delicious flavor and crispness from superior skill in working and baking."

Thorn & Brother, Trenton,

Exhibited products of bakery, for which they received a medal and diploma, for "fine display of biscuit and crackers."

Charles G. Amende, Hoboken,

Exhibited salt for preserving animal substances, for which he received a medal and diploma for a "cheap and simple method of preserving raw and cooked meats without canning."

Julius Hincke, Egg Harbor City,

Exhibited wine, and was awarded a medal and diploma for the "very good quality of his still wine, branded 'Jollink' of 1870 and '72."

Alfred Spear, Passaic,

Wine, for which he was awarded a medal and diploma for "good quality of blackberry wine."

T. H. Johnson, Bricksburg,

Exhibited unfermented wine, and received a medal and diploma for an "article well calculated to satisfy the requirements of a wine containing no alcohol."

John Outcalt, Spotswood,

Exhibited pearl meal, pearl hominy, coarse hominy, corn grits, Graham flour, &c., for which he was awarded a medal and diploma for "great variety of the manufacture, excellent quality of the several products."

MISCELLANEOUS.—MANUFACTURED GOODS.

The Joseph Dixon Crucible Company, Jersey City,

Exhibited lead pencils, and was awarded a medal and diploma "for the superior quality of pencils from American graphite, their smoothness and durability, and consistency of grade."

Bender & Phillips, Hohokus,

"Sheet wax," for which was given a medal and diploma "for strength and pliability."

C. A. Schnidler, West Hoboken,

Manufacturer of piano forte stools, was awarded a medal and diploma for "novelty, strength and fitness."

S. Adger Darrack, Newark,

Exhibited wheeled crutches, and received a medal and diploma for "originality of design, perfection of mechanism, suitable for the purposes desired, and demonstrated usefulness."

John Underwood, New Durham,

Exhibited inks, and was awarded a medal and diploma for a "superior kind of copying ink, especially valuable for railroads, &c., &c.; also, capital printing ink, of excellent quality,"

Lister Brothers, Newark.

Exhibited from their extensive manufactory, super phosphates, animal charcoal, bone entire, and crushed bones, were awarded a medal and diploma for the "quality of raw material used in the manufacture of artificial manures, as bones whole and crushed, sulphuric acid, sulphate of ammonia, nitrate and sulphate of soda, for the quality of the super phosphates, of the animal charcoal, and of the bone manure."

Condit, Hanson & Company, Newark,

Exhibited an extensive display of electroplating materials, and were awarded a medal of honor and diploma for a "fine display of electroplating materials, especially nickel salts, and metallic nickel."

Newark Tea Tray Company, Newark,

Manufacturers of Japanned tea trays, children's trays, dust pans, &c., &c, exhibited Japanned tea trays and waiters, for which they were awarded a medal and diploma for "extent, variety, richness, beauty of design, and ornamental workmanship."

F. C. D. McKay, Paterson,

Exhibited shade rollers, and was given a medal and diploma, for "simple construction and ease of adjustment."

Robert O. Applegate, Camden,

Manufacturer of ironing tables, for which he was awarded a medal and diploma for "adjustable ironing tables, well adapted for family use."

Thomas E. McDonald, New Brunswick,

Exhibited clothes wringers, and received a medal and diploma for "useful, practical, and well adapted for family use."

John L. Mason, Camden,

Exhibited Mason's patent glass fruit jars, of 1872, and was awarded a medal and diploma for "an easily adjusted cover, screwed down upon a rubber washer, making an airtight joint, held firmly in place by a metal flexible screw ring, on the exterior surface of the neck of the jar, and can be opened without disturbing the contents."

Mrs J. H. Slack, Bloomsbury,

Exhibited combination (fish) hatching boxes, for which she was awarded a medal and diploma, for an "excellent

arrangement for hatching large quantities of eggs in a small space."

Celluloid Manufacturing Company, Newark,

Manufacturers of toilet brushes and jewelry made from celluloid, and received a medal and diploma for the "novelty of the material used and a very fine finish."

Pierson & Herman, Newark.

Manufacturers of hat blocks, flanges and hatters' blocks, for which they were awarded a medal and diploma for "good work and adaptability to the purpose intended."

Mrs. Elizabeth G. Harley, Haddonfield,

Exhibited a complete darning, and received a medal and diploma for "utility and convenience."

Theodore Leonhard, Paterson,

Exhibited wax, and received a medal and diploma for "fine white color and tenacious quality."

Joseph Fritsch, Carlstadt,

Wax, for which he was given a medal and diploma for "superior refinement."

S. Slack & Company, Orange,

Manufacturers of stained glass windows, for which they were awarded a medal and diploma for being "fairly harmonious in color, in the general treatment quite artistic, effect, without being rich or brilliant, is pleasing."

J. H. Barlow, Jersey City,

Exhibitor of pen drawing. He was awarded a medal and diploma for pen drawing 4164, "The American Centennial."

POULTRY.

The following comprise the full list of names and addresses of those from New Jersey who exhibited poultry at

Philadelphia, and were awarded diplomas and medals for superior excellence of the fowls :

Benjamin Mann, Haddonfield.
Frank L. Boppe, Newark.
George Denholm, Passaic.
John J. Berry, Hackensack,
P. Q. Holcombe, Reaville.
W. F. Muchmore, Baskingridge.
J. C. & D. Pennington, Paterson.
John Lau, Lambertville.
J. F. Street, Beverly.
Magrane & Fairservice, Newark.
Henry Hales, Ridgewood.
John Martin, Metuchin.
James Russ, Beverly.
Oscar Seifert, Newark.
John E. Diehl, Beverly.
Mrs. J. E. Diehl, Beverly.
Lewis Waefelaer, Hoboken.
Thomas B. White, Ridgewood.
Miss W. E. Diehl, Beverly.
Solomon Shears, Tuckerton.
H. H. Lowrie, Plainfield.
Daniel Mills, Westfield.

DOGS.

The subjoined is a list of the names and addresses of those who exhibited the different breeds of dogs at the Centennial dog show, and were awarded medals and diplomas for superior excellence :

Charles H. Raymond, Morris Plains.
Walter Humphreys, Newark.
Joseph A. Porter, Camden.
A. P. Baldwin, Newark.
Samuel D. Bergen, Camden.

James H. McGuire, Trenton.
Frank D. Buttolph, Morristown.
Frederick Underhill, Newark.
T. F. Taylor, Colts Neck.
Jacob Pentz, Newark.
Jesse W. Starr, Jr., Camden.
Andrew Albright, Newark.
Edward Howe, Princeton.
John E. Diehl, Beverly.
Samuel Kenedy, Kaighns Point.
Henry Smith, Paterson.
Thomas F. Bell, Camden.
James Ayres, Allamuchy.
Thomas H. Dudley, Camden.
Francis B. Pye, Trenton.
Richard T. Miller, Camden.
A. S. Phillips, Camden.
Edward A. Hawes, Newark.
H. Bradshaw, Trenton.
G. H. Vannote, Tuckerton.
Richard L. Miller, Camden.
Thomas H. Mann, Haddonfield.
Chester J. Buck, Bridgeton.
Herman C. Berg, Rocky Hill.
Max Henzel, Hoboken.
A. S. Phillips, Trenton.

SAM'L C. BROWN,
President.

P. T. QUINN,
Secretary.

The Physical Geography of New Jersey.

By State Commissioner Dr. S. B. Hunt.

The permanent wealth of a State depends largely upon its physical conformation, and its relations to the commerce of other regions. Neither the amenities of climate nor the fertility of soil, nor even the wealth of mines can build up a great commonwealth in a region off and aside from the grander lines of travel, and dis severed from rapid communication with metropolitan centres. By causes easily explained, the Narrows of New York bay have become the gateway of the commerce of a continent, and the inlet and outlet of a corresponding foreign traffic. The supremacy of the harbor which lies along our northeastern coast was due, first, to its unsurpassed convenience and safety, and secondly, to the genius of De Witt Clinton, in developing the singular valley which connects by canal the waters of the great lakes with those of the ocean. For a long series of years, and until the charm of what seemed a fiat of nature was broken by the introduction of steam railroad transportation, the inland port of Buffalo, the Odessa of America, drew to itself and necessarily to New York, the grain trade of a region extending south of the Ohio and west of the Mississippi. By a wise handling of communications the Mohawk valley became the route from Cincinnati to New York, and the long detour was supposed to be an insuperable necessity.

The development of a trans-continental railroad system, while it has left unchanged the Narrows of New York harbor as the objective point of oceanic commerce, has now

brought all the trade and transportation leaving New York across the State of New Jersey, except the New England States, and that small area north of the elevated plateau between the Mohawk and the Delaware or Susquehanna valleys and river systems of southern New York. By a singular conformation of mountain ranges and intervening depressions, the great valleys all debouch from the west and south upon the plains of New Jersey, and have built up a foreign commerce, nominally that of New York, but the actual handling of products, and the actual wharves and landings are largely upon the Jersey shore of the Hudson, thus compelling dense population along the west bank of the Hudson.

Walled in by highlands and mountains upon the north, the surface is not so rough as to prevent the construction of railroads through the valleys of the Hackensack and Passaic, which pierce the mines of the hill region, or extend beyond to the lakes. The railroads concentrating at Jersey City are, in regular order, the Albany and Jersey City; Northern, of New Jersey; Greenwood Lake; Oswego Midland; New Jersey Midland; Erie Railway; Delaware, Lackawanna and Western; Pennsylvania; Lehigh Valley; New Jersey Central, and Newark and New York, all debouching upon about four or five miles of shore line of water, deep enough to float the largest steamships. Nearly all these roads have numerous laterals or feeders, or are continuous with the entire railroad system of the continent, from ocean to ocean, and from the Red River of the North to the Rio Grande. There is not in all the world another railway centre so important, or with so boundless a destiny before it. It is the hand of God that has made it so. The physical configuration of the State compels its prosperity.

Yet, aside from the laws of commerce, which brings railroads across the State as surely as the Mississippi flows to the Gulf, there are many permanent and intrinsic features

of internal wealth. With no coal within its own borders, it is the leading coal mart of the country. Its mountains are rich in ores of iron and zinc. Its quarries furnish the choicest of stone, and its forests contain more than 100 varieties of native woods, mostly of the large leaved and hard timbered kinds. Its hickory, chestnut, oak and ash attain the largest size, and are of the toughest fibre, a point of great importance in the making of agricultural implements and in carriage and railroad construction. Besides the more than 100 indigenous trees, every variety of fruit not semi-tropical is grown in lavish profusion. Placed between the largest cities of the continent, the farmers and gardeners of New Jersey find an insatiable market either in New York or Philadelphia. There is no spot in the Union where so little need go to waste. All things have a money value.

New Jersey, then, has the dominant characteristics that make the East the leading commercial and manufacturing region. It has nearness to Europe, abundant water-power, valuable and varied forests, inexhaustible resources of coal, across the Pennsylvania border, and iron and of some of the other metals, great deposits of marl, and the finest pottery clays, and excellent harbors, with full and intimate relations with every source of wealth upon the continent, and of wealth within its borders, all crowned by noble mountain scenery, with lakes of purest water in unfailing supply.

It remains only to speak of the climate. It is semi-maritime. The lower half of the State lies between the ocean and the Delaware bay, and the sea air materially moderates the temperature. 90° of Fahrenheit is an exceptional and excessive heat. The thermometer rarely falls below zero, and the record of the mean temperature of the coldest weeks is +10°. The mean of the year is 48° Fahrenheit. The State is so far to the south of the region of storm centres, that tempests and tornados are unknown. The mean barometric pressure of the year is 30.034 inches, just

the average of the normal pressure of the atmosphere, higher than that of the New England States, but lower than the pressure on the southern coast. The rain fall is correspondingly equable, being about 44 inches for the year, and well distributed through the different months. The country has not been deforested, there being about 120 acres of native woodland to the square mile in the north, while in the pine regions of South Jersey it ranges from 120 to 240 acres of forest to the square mile.

Thus we find in New Jersey all the geographical and climatic conditions which constitute a State. It lies with its head pillowed against the great Appalachian range at the north, shouldered in by the Palisades on the east, and the Blue Mountains on the west, its extremity laved by the ocean and the Delaware bay, while across its center lies the easiest road toward the great West, the Ohio valley and the States of the Gulf of Mexico. These are advantages of situation which can never be taken away, and which promise to add a glorious future to an already triumphant past.

NEW JERSEY AFTER THE REVOLUTION.

Since we have reproduced an early map of New Jersey to accompany this report, it was thought that we might with equal propriety append also what may be regarded as a contemporary of that map, viz.: an old-time outline description of New Jersey, embracing references nearly a century back, to our State's manufactures, commerce, currency, expenses, &c., set forth in the peculiar style of its renowned author, the Rev. John Witherspoon, D. D., a Christian patriot, statesman and divine.

A DESCRIPTION OF THE STATE OF NEW JERSEY.

Answers in part to Mr. Marbois' questions respecting New Jersey.

I. New Jersey is bounded on the north by a line drawn from the North or Hudson's river to the boundary of Pennsylvania, fixed about ten years ago by commissioners appointed from New-York and New-Jersey, and marked in all the late maps. This line runs nearly west, and passes about thirty miles north of Morris-town in New-Jersey.

It is bounded on the east by Hudson's river, from the line just now mentioned to the sea.

It is bounded on the south by the Atlantic Ocean, from the mouth of Hudson's river to Cape May, at the mouth of Delaware Bay. And on the west by the Delaware, to the

place where the first mentioned line strikes it, between two and three hundred miles from the sea.

II. Smith's History of New-Jersey is the only publication that can answer the design of this query.

III. New-Jersey consists of thirteen counties, which, beginning at Cape May on the Delaware Bay, lie in the following order: Cape-May, Salem, Cumberland, Gloucester, Burlington, Hunterdon, Sussex, Morris, Bergen, Essex, Somerset, Middlesex, Monmouth. These counties are subdivided into townships or precincts.

There are no cities in New Jersey but Burlington and Perth-Amboy, which were severally the capitals of East and West Jersey, as will be seen by the patents and history of the settlement.

The chief villages, or considerable places in New-Jersey, are Haddonfield, Mountholly, Burdowntown, Trenton, Princeton, Brunswick, Morristown, Springfield, Woodbridge, Elizabeth-town, Newark, Hackensack, Pittstown, Cranberry, Shrewsbury, Allentown, Pennington, and some others of less note.

The only river of considerable extent in New-Jersey, is the Raritan; the two branches of which, passing through the north-eastern parts of the State, unite near twenty miles above Brunswick, and receiving the Milstone and some other smaller streams, it becomes navigable about two miles above Brunswick, and from thence to Amboy bay, about twenty miles by water, is navigated by shallops and small vessels of one hundred or one hundred and fifty tons.

South river passes through Cranberry, in Middlesex county, and empties itself into the Raritan before it reaches Amboy.

Black river is a considerable stream, passing through Morris county eastward, and empties itself into Hudson's river.

Passaic river passes through Bergen county, and enters

into the bay opposite to Newark. There are falls pretty remarkable on this river, at the head of the bay, which many people go to see as a curiosity.

There are many other small rivulets, not considerable, and many creeks and inlets upon the sea coast, and particularly in the bay and river of Delaware, none of them navigable far into the country.

As to mountains, there is a ridge not very high, but commonly called Rocky Hill, which crosses the great road from Philadelphia to New-York about five miles eastward of Princeton, and runs from the south-east to the north-west, continuing about ten miles in length, passing about one mile and a half to the north of Princeton. Though there are no hills properly speaking, there is a continual and gradual ascent from the Delaware to Princeton, and a gradual descent from thence to the eastward. There is a great ridge of mountains near and on the boundary between New-Jersey and New-York, running chiefly from east to west.

The trees are very various. As to forest trees, there are oaks of various kinds, ash, maple, birch, chestnut, walnut, pine, locust. The middle and upper parts of the country run much into the several kinds of oak, and in the lower parts are to be found great quantities of pine and cedar. The mulberry tree thrives in most parts of the State; and it seems remarkably favorable to fruit trees, particularly apples, pears, cherries and peaches, of all which there is great abundance. The vine grows spontaneously in many parts, and bears a large blue grape, not unpleasant to eat.

The produce of the improved farms is wheat, rye, barley, Indian corn, buckwheat, flax, and hemp. It is usual for farmers to have a small piece of land in tobacco; but it is only for their own use, or that of their servants; it is not raised in New-Jersey for sale. All the garden herbs raised in France and England thrive well in New-Jersey; so

probably would vines, if cultivated by persons who understood the business.

Black cattle are raised in New-Jersey to great advantage—also horses. There is a particular turn in the inhabitants for raising fine horses from the breed imported from England. There is also a large breed of heavy draught horses in those parts of the State chiefly inhabited by the low Dutch.

IV. The number of inhabitants in New-Jersey at present, is certainly not less than two hundred thousand. There was an exact list of them taken about ten years ago, which will be procured in a short time. There are negroes, but they are certainly not above one seventh or one tenth part of the whole. The negroes are exceedingly well used, being fed and clothed as well as any free persons who live by daily labor.

V. There is no profession of religion which has an exclusive legal establishment. Some particular churches have charters of incorporation; and probably they would not be refused to a body of any denomination. All professions are tolerated, and all protestants are capable of electing and being elected, and indeed have every privilege belonging to citizens.—There are in New-Jersey, English presbyterians, Low Dutch presbyterians, episcopalians, baptists, quakers. The two first, except the difference of the national connection of the one with the church of Scotland, and the other with the church of Holland, and the language, are of the same principles as to doctrine. They have the same worship and government, and they are by far the most numerous. There is a great majority of the present legislature of these two denominations. Formerly the quakers, though not the majority, had considerable influence; but since the late contest with Great-Britain, they are fewer in number, and altogether without power. The episcopalians are few. The baptists are presbyterians in all other respects,

only differing in the point of infant baptism; their political weight goes the same way as the presbyterians; their number is small.

VI. There is at Princeton a college, which had originally a royal charter, begun in 1748. It is now confirmed in its privileges, with some alterations and improvements, by act of assembly. The charter name of it is, the College of New-Jersey; the name of the building, Nassau-Hall. It was in a flourishing state before the war, having about one hundred and fifty under graduates and other scholars; but was entirely desolated, and the house made a wreck by the confusion of the times—first by the English army, which entirely scattered the scholars, and took possession of the house; and afterwards, by the American army making it a barrack and hospital. It now begins to recover, having of under graduates and scholars about sixty.—A printed account of the college has been given to Mr. Marbois before.

There is also in New-Jersey a college, whose charter name is Queen's College, set up by the Low Dutch, with a particular view to preserve their language, and all the peculiar customs of the church of Holland. They have no building as yet, but have carried on their instruction sometimes at Brunswick, sometimes elsewhere.

The College of New Jersey is the best building in the State. Neither churches nor court-houses are any where sumptuous. There is no public hospital in the State.

There are few men of letters in the State of New-Jersey, except those who belong to law, physic, or theology; and many of these professions are often taken up without a liberal education. The state consists almost wholly of substantial farmers. There has been formerly known, especially when the quakers had some power, a prejudice against learning—That prejudice begins to wear off.

There are no turnpike roads. There are statutes for the wideness of the public roads; also for repairing, though it

is generally poorly done—yet from the climate and the level position of the country, the roads are excellent in summer. The accommodations in taverns are in general as good as in any State in America. The great road from Philadelphia to New York lies through the middle of New-Jersey, by Trenton, Princeton, Brunswick, Woodbridge, Elizabeth-town, and Newark.

VII. I cannot at present recollect any customs peculiar to the State, or that from their singularity deserve notice. New-Jersey was first peopled by the Low Dutch, at least the eastern part of it. Their language is continued there as yet, though wearing out. They are a remarkably cleanly people, and frugal. They use their slaves and other servants with great humanity, often not scrupling white and black to eat together. People from all the other States are continually moving into and out of this State, so that there is little peculiarity of manners.

VIII. *The present state of manufactures, commerce, and exterior trade.*

New-Jersey being in general settled by farmers, with a great equality of rank and even possessions, no considerable manufactures are established in it. There are, however, tradesmen dispersed through it, of almost every kind. The farmers being frugal and plain in their manners, always made both linen and woollen cloth for their own families and their servants. They have given greater attention to this matter within these five or six years that the differences with Great-Britain have subsisted. I believe it may be depended upon, that there is not one in ten of the members of the legislature of New-Jersey, who is not clothed in the manufacture of his own family for the greater part, and many of them have no other clothing of any kind. At this time a great quantity of very good cloth is made in the families. Some tradesmen in different places make for sale, but not much. There are some very considerable dealers

in leather, and still a greater number in hats. All iron tools are well made here, but not for exportation out of the State.

From the situation of New-Jersey, there is hardly any foreign trade carried on directly from it. The merchants in Trenton, Brunswick, Burdowntown, and several other places, have boats, shallops, and other small vessels, with which they trade to Philadelphia or New York. In former times ships might be entered both at Burlington and Amboy, for any part of the world: but few are sent abroad—such of our merchants as are concerned in foreign trade, being almost always joined in company with some of the large cities above mentioned.

IX. *A notice of the best sea-ports in the State, and how big are the vessels they can receive.*

The best sea-port in the State of New-Jersey is Amboy, which can receive vessels of as great burden as New-York. There has never been as yet any great foreign trade at Amboy. The vicinity of New York has probably been a hindrance to it. There are harbors at little Egg-harbor and great Egg-harbor, on the coast of the Atlantic, which privateers and traders have made a considerable use of since the war. They cannot receive vessels of great burden; but the greatest part of the trading vessels can go in there. The same is the case with the creeks on the Jersey shore, in the river Delaware.

X. *A notice of the commercial productions peculiar to that State, and of those objects which the inhabitants are obliged to draw from Europe and from other parts of the world.*

The productions of New-Jersey, and the sources of its wealth, are grain of every kind, as mentioned under question third—horses, cattle, salted beef and pork, and poultry. In times of peace, great quantities of all these are sent to the West-Indies, and flax-seed to Europe, shipped, however, more commonly in Philadelphia or New-York than any

port in New-Jersey. The city of Philadelphia receives a great proportion of its provisions, including vegetables of every kind, from New-Jersey. The soil of that part of New-Jersey which is opposite to Philadelphia, is exceedingly proper for gardening, and derives much of its value from its proximity to that city.

The State of New-Jersey is obliged to draw from Europe and other parts, tea, sugar, wine, spirits. Before the war they purchased considerable quantities of English cloth, both linen and woollen, because cheaper than they could manufacture it in many instances, and because many tradesmen and others had not the materials of manufacture. All articles of finery they must purchase if they use them—lawns, gauzes, silks and velvet.

XI. *The weights, measures, and the currency of hard money—Some details relating to the exchange with Europe.*

The weights and measures now used in New-Jersey, are the same as in England, of every kind—measures of length, solidity, superficies, dry and liquid. The most common for grain is the bushel, which contains eight Winchester gallons, and each gallon two hundred and seventy-two and a quarter solid inches.

The exchange between New-Jersey and Europe, is carried on almost wholly through Philadelphia and New-York.

The statute currency of money in New Jersey is in the same proportion to sterling as that of Pennsylvania, that is, as five to three. A Spanish milled dollar is, of New-Jersey proclamation money, seven shillings and six pence. There was twenty years ago, a currency or way of reckoning in New-Jersey, commonly called light money, according to which a dollar was eight shillings and eight pence, but this seems now to be wholly dissused, or confined only to the northeastern part of the State. The other way of reckoning is called *proclamation money*, which prevails.

XII. *The public income and expenses.*

The public income of New-Jersey consists, so far as is known to me, of taxes annually laid by the assemblies; and is great or small, as they shall think the exigencies of the State require. There is in general a great disposition to save the public money; indeed, such as in many instances to make inadequate provision. The salary of the Governor was, by the act of supply, October, 1775, before the change from a colony to a free State, twelve hundred pounds, proclamation money; the judges of the Supreme Court, three in number, had each of them one hundred and fifty the same year; all other expenses for clerks, &c., were small; and the members of council and assembly had each eight shillings for every day's attendance. The delegates in Congress had at first twenty shillings per day; and during the depreciation of the money, if they made any allowance at the beginning of the year because of its bad state then, they never made any amends for the increased depreciation before the year expired. As to this and all such matters, they may be seen more fully from the printed laws, which I believe may be purchased of Isaac Collins, printer to the State, in Trenton.

XIII. *The measures taken with regard to the estates and possessions of the rebels, commonly called tories.*

They have been all sold off *in perpetuum*, and are now in possession of the new proprietors; the debts upon them to faithful subjects, having been first discharged.

XIV. *The marine and navigation.*

There are no vessels whatever belonging to the State of New-Jersey. There are privateers who have commissions, which sail from the ports on the coast, or on the enemy's lines. There is an admiralty court established for the condemnation of prizes.—As to merchant ships, see the answer to question eighth.

XV. *A notice of the mines, and other subterranean riches.*

There are some very valuable iron mines in New-Jersey, in Morris and Sussex counties. Some companies in England were concerned in working some of these mines before the war. It was suspected some years ago, that there were copper mines in New-Jersey; but no trial hitherto made has fully succeeded—some gentlemen lost their fortunes in the attempt.

It is not known whether there are any coal mines or not, as people everywhere burn wood.

XVI. *Some samples of the mines, and of the extraordinary stones; in short, a notice of all that can increase the progress of human knowledge.*

Iron ore is so very common, that it cannot be supposed to be an object of curiosity. I have heard of, and seen some pieces of black matter, that was said, when dissolved in water, to be exceedingly good ink. If this or any other curiosity can be obtained by enquiry, they shall be forwarded.—There is very good marl in some parts of New-Jersey, to the eastward.—There is no limestone in the parts of New-Jersey where I have been, but probably there is some in Sussex.—There are in several places of New-Jersey, sugar-maple trees, whence the country people draw sugar for their own use, as in the back parts of New-Hampshire and Vermont.

XVII. *A description of the Indians established in the States, before the European settlements, and of those who are still remaining. An indication of the Indian monuments discovered in that State.*

The Indians, and their manner of life, are described in several books, much better than I can do it, who was never among them. And indeed by comparing together all that I have ever heard or read, it appears that the characteristic features of the Indians of North-America, are the same which have distinguished savages in all parts of the world,

and wherever discovered—gravity and sullenness of deportment, love of hunting and war—that is to say, depredation; ferocity to their captives, laziness and aversion to habitual labor, tyranny over the female sex, passive courage, and, if it may be called so, active cowardice, and strong passions, both of lasting gratitude and unextinguishable resentment.

The chief thing that a philosopher can learn from the Indians in New-Jersey is, that perhaps the most complete experiment has been made here how they would agree with cultivated life. At the time when the Indians sold and confirmed the lands to the settlers, at their own request, a tract of land was purchased for them to live in the heart of the colony, in Burlington county, of three thousand acres and more, which was secured to them by law. They had a village built, and a house of worship and a minister, and every possible encouragement given them to cultivate the land, and carry on trades; yet, after all, they were so far from increasing in numbers or improving in industry, that at different times several of them went back into the woods, and the remainder dwindled away, so that there are few of them now left. On the whole it does not appear, that either by our people going among them, or by their being brought among us, that it is possible to give them a relish of civilized life. There have been some of them educated at this college, as well as in New-England; but seldom or never did they prove either good or useful.

I N D E X .

I N D E X .

A.

	Page.
Acts of Congress creating the Commission.....	19
Board of Finance.....	19
Agricultural county committees	112
Exhibit, meeting relative to, in Assembly chamber.....	112
addresses and resolutions.....	112
Central Committee on.....	119
of New Jersey, descriptive list of.....	155-91
names of exhibitors.....	188-91
American Institute in New York.....	4-6
Apgar, Prof. E. A.—State Superintendent of Education.....	47
Apple culture.....	175-6
Area of the State.....	217
Atherton, Prof. Geo. W.—Resolutions on agricultural display.....	112
Arsenic iron ore.....	292
Auditing committee of accounts.....	126
Awards at Paris in 1867.....	12
Awards of merit at Philadelphia.....	357-94
Award for State Building.....	358
agricultural display.....	358
geological survey.....	358
machinery.....	358-64
cutlery, castings, brass, steel, silver.....	364-8
carriages, wagons and wheels.....	368
silk, cotton, woolen and fur goods.....	369-72
boots, shoes, leather and rubber work.....	372-74
harness and harness trimmings.....	374-5
agricultural implements.....	375-7
pottery, pipes, and earthenware.....	377-8
fine arts, drawing, sketching and educational.....	379-83
cattle, horses and swine.....	383-5
horticulture.....	385-7
paper ware.....	387-8
domestic goods.....	388-9
miscellaneous manufactured goods.....	390-2

	Page.
Award for poultry.....	392-3
dogs.....	393-4
Azoic formations.....	220-4
crystalline limestones.....	225-7
gneiss, granite, syenite, mica schist, &c.....	220-4

B.

Bedle, Governor J. D.—desires New Jersey well represented.....	44
received by committee of Philadelphia citizens.....	55
address at State Building.....	83-4
reception at State Building.....	85
Bettle, Edward—resolution against soliciting subscriptions.....	110
Brown, S. C.—address of welcome to Governor Bedle.....	81-3
Browning, Hon. Abram—historical address.....	57-80
Building materials of New Jersey.....	259-262
Building stone	259-60
Flagging and paving stones.....	261
Lime and cement.....	261-2
Roofing slate.....	261
Buildings, Exhibition—dimensions of.....	16
sales of.....	53

C.

Canvassers for manufacturing centres.....	108
Circular—rules and regulations for exhibitors.....	101-4
respecting agricultural department	113
to New Jersey exhibitors.....	123
Clark Thread Company at the Centennial.....	92-3
dinner at American restaurant.....	93
Clays, unclassified	292
Cleveland, Orestes—National Commissioner from New Jersey.....	44
resolution forbidding sale of intoxicating liquors	110
College of New Jersey exhibit.....	48
Colleges.....	335-7
College of New Jersey.....	335
Rutgers, exhibit.....	48, 336
Commissioners, State Board—appointed.....	44
record of proceedings.....	99-134
information to exhibitors.....	105-6

	Page.
Commissioners, county committee, appointed.....	112
preliminary report to the Governor.....	129-32
five thousand copies of report ordered.....	133
complimentary resolutions to President and Secretary	134
financial statement.....	135
Concessions, interests, etc.....	17
Cook, Prof. George H.—State Geologist.....	47
Copper ores.....	292
Corporators from New Jersey.....	23
Cotton fabrics supplanting the English.....	96
Cranberry culture and table of products.....	168-74
Cretaceous Formations.....	240-53
Greensand marl beds.....	251
Lower marl bed.....	251
Middle marl bed.....	252
Upper marl bed.....	253

D.

Dargon, William—liberality in Dublin.....	7
Dayton, Mrs. Wm. L.—represents women of New Jersey.....	40
Devonian Formations.....	237-8
Cauda-galli grit.....	237
Corniferous limestone.....	237-8
Marcellus shale.....	238
Oriskany sandstone.....	237
Dinner to Governor Bedle and guests.....	85-7
Dublin International Exhibition, 1853.....	6
Total admissions.....	7
Receipts.....	7
Dudley, Thomas H.—on Board of Finance.....	44

E.

Educational Exhibit.....	305-55
Normal School.....	305
Model School.....	306
Farnum Preparatory School.....	306
Atlantic county.....	307
Bergen county.....	308
Burlington county.....	309
Camden county.....	310

	Page.
Educational Exhibit—	
Cape May county.....	312
Cumberland county.....	313
Essex county.....	314
Gloucester county.....	316
Hunterdon county.....	317
Hudson county.....	318
Mercer county.....	320
Middlesex county.....	322
Monmouth county.....	323
Morris county.....	325
Ocean county.....	326
Passaic county.....	328
Salem county.....	329
Somerset county.....	330
Sussex county.....	331
Union county.....	332
Warren county.....	334
Excursion parties from New Jersey.....	88
Exhibition buildings, at Philadelphia, dimensions of.....	16
an educator of the masses.....	36
exceeds early calculation.....	46

F.

Fairs, early origin in Europe.....	3
Farming implements, but one State uses more than New Jersey.....	180-81
Farms lessen in size as population increases.....	182
Fertilizers, natural.....	208
Fog Horn, (spokesman of Uncle Sam).....	50

G.

Geological survey of New Jersey.....	217-304
recent formations.....	255
award.....	358
maps exhibited.....	301-2
Gillespie, Mrs. E. P.—President of Women's Department.....	40
Goshorn, A. T.—great executive abilities of.....	33
Grape culture and wine making.....	166-68

	Page.
London International Exhibition of 1862.....	9
total admissions.....	9
receipts from admissions.....	9
average daily admissions.....	9
receipts.....	9
largest and smallest days.....	9
total exhibitors.....	9

M

Machinery Hall owned by city of Philadelphia.....	17
Magnetic iron ores.....	262-87
Mines of the Musconetcong Belt.....	277-84
Passaic Belt.....	264-76
Pequest Belt.....	284-7
Ramapo Belt.....	263-4
Manufacturing industries of New Jersey.....	94-9
Manufactures brick, pottery, tile, &c.....	299-300
Marls—analysis and annual product.....	185-7
greensand clay marls.....	203
lower marl beds.....	203-4
middle marl bed.....	204-7
upper marl bed.....	207
Tertiary (Miocene) marls.....	207-8
Medal—gold, voted to the President.....	124
presented by Dr. Hunt.....	125
Memorial—committee and report on textile fabrics.....	126-9
Memorial Hall owned by State of Pennsylvania.....	17
Metallurgical products.....	296-7
iron.....	297-8
zinc.....	296-7
Minerals.....	256-9
Model of Mine Hill.....	303
Moral effects of visits by large bodies of operatives.....	93-4

N.

New Jersey Legislature authorizes the State Board.....	29
first appropriation for Board.....	30
second appropriation for Board.....	31
appropriation for educational exhibit.....	31
appropriates \$100,000.....	39

	Page.
New Jersey total contributions to Centennial.....	45
influence in behalf of the Centennial.....	37-8
collective exhibits.....	46-9
fifth manufacturing State.....	47
geological survey.....	47
educational exhibit.....	47-9
settlement	58
population	59-61
wealth.....	62-5
soil	65-6
mines	67-70
manufactures	70-5
churches	75-6
common schools.....	77-80
list of exhibitors.....	137-53
agricultural exhibit.....	154-91
after the Revolution.....	399-409
New York International Exhibition of 1853.....	5
exhibition semi-international	6
building burned in 1858.....	6
total contributions to Centennial.....	45

O.

Opening day changed.....	32
Organization and progress of the exhibition.....	32-7

P.

Palais de l'Industrie erected by a company.....	7
Parker, Governor, Joel—an early advocate of the Centennial.....	38
Paris Universal Exposition, 1855.....	7
total admissions.....	8
receipts from admissions.....	8
average daily admissions.....	8
receipts	8
largest and smallest days.....	8
total exhibitors.....	8
Universal exposition of 1867.....	10
total admissions.....	11
receipts from admissions.....	11

	Page.
Paris Universal exposition of 1867—	
average daily admissions.....	11
receipts.....	11
largest and smallest days.....	11
total exhibitors.....	11
percentage of awards.....	12
Pear culture.....	176--79
Peach culture.....	179--80
Pennsylvania, contributions of.....	17
Philadelphia International Exhibition, 1876.....	15
total admissions (see preface).....	v
receipts from admissions.....	19
average daily admissions.....	19
receipts.....	19
largest and smallest days.....	19
total exhibitors.....	18
Physical Geography of New Jersey.....	395--98
Preceding International Exhibitions.....	4--13
Prince Albert, first to suggest international exhibitions.....	4
Prince Napoleon—President of Exposition of 1867.....	10
Private schools.....	338--42
Publications of geological survey.....	303--4
Public schools.....	342--4
synopsis of the system.....	345
valuation of school houses.....	351
buildings and furniture.....	352
number of buildings erected.....	354
increase of accommodations.....	354

S.

Sand, glass.....	293--4
moulding.....	294--5
Silurian formations.....	227--36
fossiliferous limestone.....	233
Hudson River slate.....	234
Lower Helderberg limestone.....	235--6
magnesian limestone.....	229--33
Medina sandstone.....	235
Oneida conglomerate.....	234--5
Potsdam sandstone.....	228--9
water lime group.....	235

	Page.
Singer Manufacturing Company at the Centennial.....	88-92
dinner at Lafayette Restaurant.....	92
flag presented by City of Elizabeth...	92
Governor J. D. Bedle—letter.....	89
Schools—Normal.....	305
Model.....	306
Farnum preparatory.....	306
private.....	338-42
summary of exhibits.....	342-44
grand total.....	344
synopsis of public school system.....	345-50
valuation of school houses	351
condition of, as to buildings and furniture.....	352
number of buildings erected.....	354
increase of accommodations.....	354
revenue.....	355
children.....	355
term.....	355
value of property.....	355
condition of buildings.....	355
teachers and salaries	355
Soils and Subsoils on exhibition.....	211-16
drift	214-16
gneissic	211
green-sand marl region.....	212-13
magnesian limestone.....	211
post-tertiary formation.....	216
slate soil	211
tertiary formation	213-14
States which erected State buildings.....	17
State Building, its popularity.....	49
location and surroundings.....	50-1
total number registered.....	51
received the award.....	53
sold and re-erected in this State.....	54
committee appointed.....	107
plan submitted.....	107
first plan too costly	108
committee report on second plan.....	110
its sale considered.....	124
award for.....	358
sold to be retained in the State.....	125
State days suggested by New Jersey.....	54

	Page.
State days inaugurated by New Jersey.....	55
observed by other States.....	88
Stevens, Mrs. John G.—represents women of New Jersey.....	40
John G.—National Commissioner from New Jersey.....	44
Stock subscriptions, total.....	17
Stock subscribed by individuals in Pennsylvania.....	17
Surplus earnings of exhibition.....	17

T

Tertiary formations.....	253--4
drift.....	254
Eocene.....	254
Miocene.....	254
Triassic formations.....	238--240

U

United States loan.....	17
United States loan considered by United States Courts.....	18
a non-contributor.....	18
department a success.....	35

V.

Value of pottery and brick clays.....	218
Valuation of real estate.....	219
Vienna International Exhibition, 1873.....	12--15
total admissions.....	14
receipts from admissions.....	14
average daily admissions.....	14
receipts.....	14
largest day.....	14
Vienna report on North American industries.....	96

W.

Welsh, John—able management of finances.....	33
address at State Building.....	85
Witherspoon, D. D., Rev. John—description of New Jersey.....	399
Women's work for the centennial.....	39--43

	Page.
Women's Department, circular.....	41--3
tea parties and festivals.....	43
financial statement.....	136--7
Women's Pavilion—a good neighbor.....	50--1
Woods, growing wild in this State.....	193--201

Y.

Yield of iron mines.....	218
marl pits.....	218

Z.

Zinc ore.....	289--91
---------------	---------

73° 40'

73° 20'

Longitude West 73° 00' from Greenwich

74° 20'

74° 00'

GEOLOGICAL SURVEY OF NEW JERSEY.

GEORGE H. COOK, STATE GEOLOGIST.
JOHN C. SMOCK, ASS'T GEOLOGIST.

THE STATE OF NEW JERSEY

1877.

FROM U. S. COAST SURVEY RECORDS,
AND GEOLOGICAL AND TOPOGRAPHICAL SURVEYS
AND VARIOUS LOCAL SURVEYS TO DATE.

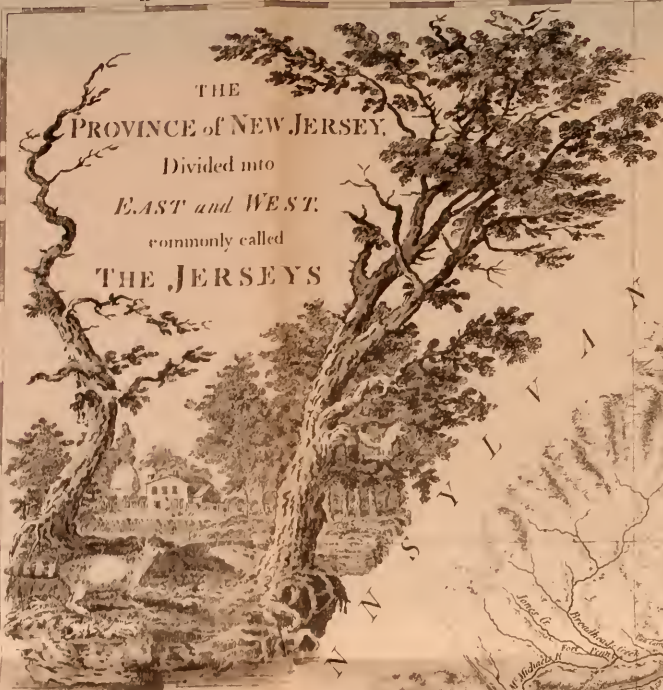
COMPILED AND DRAWN BY GEO. W. HOWELL, C. E.

Scale 6 Miles to 1 Inch
nearly Miles



20° 30° 40° 50° 1° 10° 20° 30° 40°

THE PROVINCE of NEW JERSEY.
Divided into
EAST and WEST,
commonly called
THE JERSEYS



Engraved & Published by W^o FADEN Charting Croft
December 1^o 1777.

This Map has been drawn from the Survey made in 1764 by order of the Commissioners appointed to settle the partition line between the Provinces of New York & New Jersey by Bernard Butler, Lieut. Genl. in the 6^o Regt. and John another large Survey of the Northern Part in the possession of the Earl of Dunmore by General Hunter. The whole regulated and corrected by Astronomical Observations.

What is known the River Delaware is said to be 70 Miles long
The River Hudson is said to be 140 Miles long
The River Raritan is said to be 100 Miles long
The Mountains River is said to be 100 Miles long





ASTRONOMICAL OBSERVATIONS

	Longitude		Latitude	Observers
	from London	from Philadelphia		
Philadelphia	75 10 0	0	39 56 55	Ervin Prior Leques 1769
Lewes	73 3 0	0 7 0	38 47 20	Hiddle 1769
New York Fort	73 55 20	1 42 10	40 41 50	Gow Burset Ervin Prior 1769
Sandy Hook Lighthouse			40 27 40	the Kings Commissioner
Machacarnack Fork			44 21 57	the Kings Surveyors 1769

Fac-simile of Map now in possession of Chas. D. Desler Esqr. of New Brunswick
 Photo Lith. by J. Ben. N.Y.

