### World's Columbian Exposition. The book of the builders; being the chronicle of the origin and plan of the World's Fair, by Daniel Hudson Burnham and Francis Davis Millet.

Burnham, Daniel Hudson, 1846-1912. Chicago, Columbian Memorial Pub. Society, 1894-

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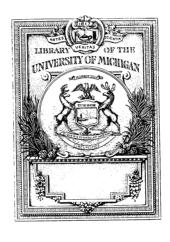


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WORLDS COLVMBIAN EXPOSITION

## THE BOOK OF THE BVILDERS

Bi

DANIEL HVDSON BVRNHAM

AND

FRANCIS DAVIS MILLET

THE COLUMNAN MEMORIAL PUBLICATION SOCIETY PUBLISHEDS SERINCEIED & ONIO

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### WORLDS COLVMBIAN EXPOSITION

### THE

### BOOK OF THE BVILDERS

AND PLAN OF THE WORLD'S FAIR; OF THE ARCHITECTVRE OF THE BVILDINGS AND LANDSCAPE; OF THE WORK OF CONSTRUCTION; OF THE DECORATIONS AND MBELLISHMENTS, AND OF THE OPERATION.

BY

### DANIEL HVDSON BVRNHAM

CHIEF OF CONSTRUCTION AND DIRECTOR OF WORKS

AND

### FRANCIS DAVIS MILLET

DIRECTOR OF DECORATION



CHICAGO, ILL., AND SPRINGFIELD, O.
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THE SITE OF THE GRAND COURT, MARCH, 1891.

THE CLUMP OF TREES MARKS THE LOCATION OF THE STATUE OF THE REPUBLIC.

### ANNOVNCEMENT.



HE fallen columns of the Parthenon show tool marks and workmen's scrawls on the surfaces which were hidden from sight when the massive blocks were in position. The weathering of centuries has obliterated every other trace of the chisel. But, slight as these marks are, sometimes, indeed, scarcely perceptible to the eye, they are sufficient to stimulate the mind to imagine the processes of actual construction and to people the Acropolis with an active throng of artisans wielding strange implements and employing machinery of

device and pattern unfamiliar to modern eyes.

The human side of the great work, the personal element of it, the story of the toils, the struggles, the disappointments, and of the final triumph of the men who carried it to perfection, is suggested by the few traces of man's handiwork left on the broad surfaces of the flawless Pentelic marble. Little else remains to connect us intimately with the life and seething activity of the construction of the noble temple. But these mute records of the past bring to the imagination a sweet echo of the ringing music of the mallet mingled with the cheery song and laughter of the workman and the creaking of the blocks, as, like a faint celestial chorus, it floated down to the shady courtyards of the broad city, and filled pious hearts with exalted anticipations of the glories of architecture rising in a network of scaffolding against the clear, blue sky. Of what immeasurable interest would the authentic story of that construction be to us to-day. With what keen delight would every detail of life be studied, and how the lessons of that golden age of art would aid and encourage us. Thus it is, indeed, with many other epoch-making achievements of human taste, skill, and enterprise seen through the long vistas of past centuries. Mutilated results of the work remain, eloquent proofs of the superior art of the designers and of the knowledge and skill of the builders; but all we have left of the human story are a few fragments and trifles saved from the accidents of time.

The World's Columbian Exposition has marked a period in the civilization of this country, has initiated a new phase of art, and has created a keen and contagious enthusiasm for the

study of the beautiful. Whatever may be the verdict of history on the artistic achievement signalized by the Exposition, it can never be denied that its influence has been most profound and far-reaching.

While the voices of the designers and builders who dreamed and wrought together still sound in our ears, and before the memories of their deeds shall have faded, it is our duty to record the story of their work, so that some chronicle of the vivid impressions of the present shall remain when the glories of the grand conception shall have vanished forever.

It is not our intention to dwell much upon the history of the location, or upon the ephemeral features of the organization; and we shall touch but lightly on the purely technical elements of the construction. Rather is it our purpose to present the more romantic aspect of the active period of designing and building, to give as suggestive an indication as possible of the spirit of the men engaged in the work, not only by pointing out the results of their efforts, but by drawing as complete a picture as may be proper of the intimate life in the center of activity.

The facilities for illustration at our command make it possible for us to use this valuable adjunct to the text and to supplement the story with an appeal to the eye which will be a help to the memory as well.



THE STATUE OF THE REPUBLIC AND THE PERISTYLE, MAY, 1893.



A DESERT ENCAMPMENT-WORKMEN'S QUARTERS, MARCH, 1891.

### BOOK OF THE BVILDERS

### CHAPTER I



ATURDAY, the tenth of January, eighteen hundred and ninety-one, will ever remain a significant date in the memories of those to whom were intrusted the design and the construction of the World's Columbian Exposition. On that day the Board of Architects appointed to plan the buildings met together for the first time and visited the ground which had been finally selected as the site of the Fair. As the party was driven slowly over the rough roads which wound among the bare and stunted trees and across the low, sandy ridges

of that dreary waste which bore the name of Jackson Park, a feeling of discouragement allied to hopelessness came over those who then first realized the extent and the magnitude of the proposed undertaking, and appreciated the inexorable conditions of a time-limitation to the work. The gray expanse of the lake beyond the sand-dunes gave a certain picturesque charm to the landscape, and the irregular pools of water, here and there among the dry grass and low bushes, suggested possibilities of pleasant waterways, while they threatened insurmountable difficulties of construction. Twenty-one months later was the day fixed by Act of Congress for the dedication of the buildings, and in the short space of twenty-seven and one-half months, or on May 1, 1893, the entire work of construction must be finished, the landscape perfected, and the exhibits installed. Such moments of discouragement are often most salutary

and stimulating to high purpose, and this brief period of despair strengthened and crystallized in that group of earnest men the pure sentiment of fraternal co-operation which, through the entire active period of constructive work, was the mainspring of the whole artistic organization. On the evening of the same day, at a dinner given by the Grounds and Buildings Committee to the Board of Architects, Mr. Lyman J. Gage, then President of the World's Columbian Exposition Company, with a sympathetic appreciation which still echoes in the hearts of those who heard him, and a prescience which, in the light of later events, seems truly inspired, struck the very key-note of the chord which had already begun to vibrate with progressive vigor. The task before the builders of the Fair was, he declared, great in



SHANTY-TOWN ON WOODED ISLAND.

every sense of the word, not only in physical dimensions, but in the highest qualities of artistic expression. Success commensurate with the opportunity could only come through the complete subordination of the individual to the interests of the whole, and each man contributing to the work of design and construction would gain his greatest reward and honor in the final perfect accomplishment of the great undertaking.

The spirit of real co-operation, which was born not only of the exigencies of the hour but of the unselfish impulses of the men who had been chosen to conduct this peaceful campaign, then and there became the greatest factor of the final success, and the strength of its influence never waned from that moment to the end.

This first stage in the building of the Fair had been reached through the arduous and energetic labors of the men who composed the preliminary organization, seconded by the



THE CONTRACTORS' CAMP ON WOODED ISLAND.

moral encouragement and material support of the citizens of Chicago in whom civic pride is a cherished and potent sentiment.

So many have recently claimed the honor of first suggesting the idea of a universal exhibition to celebrate the discovery of America, that it seems less warrantable to name any individual as the real author of the proposition than it does to ascribe the origin of it to a widely spread public recognition of the commercial and the sentimental value of a World's Fair as the most appropriate and dignified means of distinguishing the centenary of that memorable event above all others in the history of this continent.

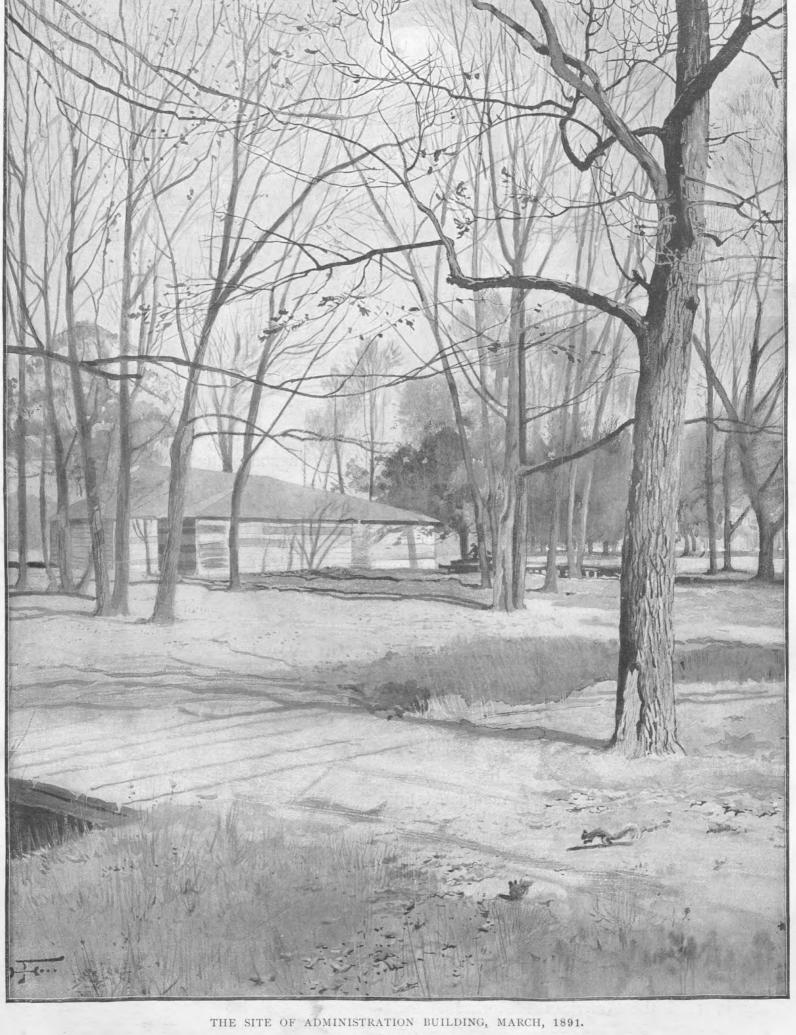
The three hundredth anniversary had been publicly recognized in a small way, it is true, when the nation was in its infancy, and it is only reasonable to believe that the occasion of

the fourth centenary would not have been neglected at a time when the United States of America was in the pride of its prosperity and in the full vigor of its mature national development. The Centennial Exposition at Philadelphia naturally suggested the celebration of an event even more important than the birth of a nation—the discovery of a continent. But the movement which originated at that time contemplated little more than the erection of a building to be dedicated to the honor of Columbus, excited in the beginning only temporary and lukewarm interest, and soon ceased to be noticed in the public Spasmodic agitation in the direction of some national celebration in 1892 continued, however, to keep the idea warm for a whole decade. Early in 1886 the American Historical Association met at Washington and appointed a committee, with Mr. George Bancroft as chairman, to urge upon Congress the desirability of celebrating



THE FIRST GATE.

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DRAWN BY HARRY FENN.

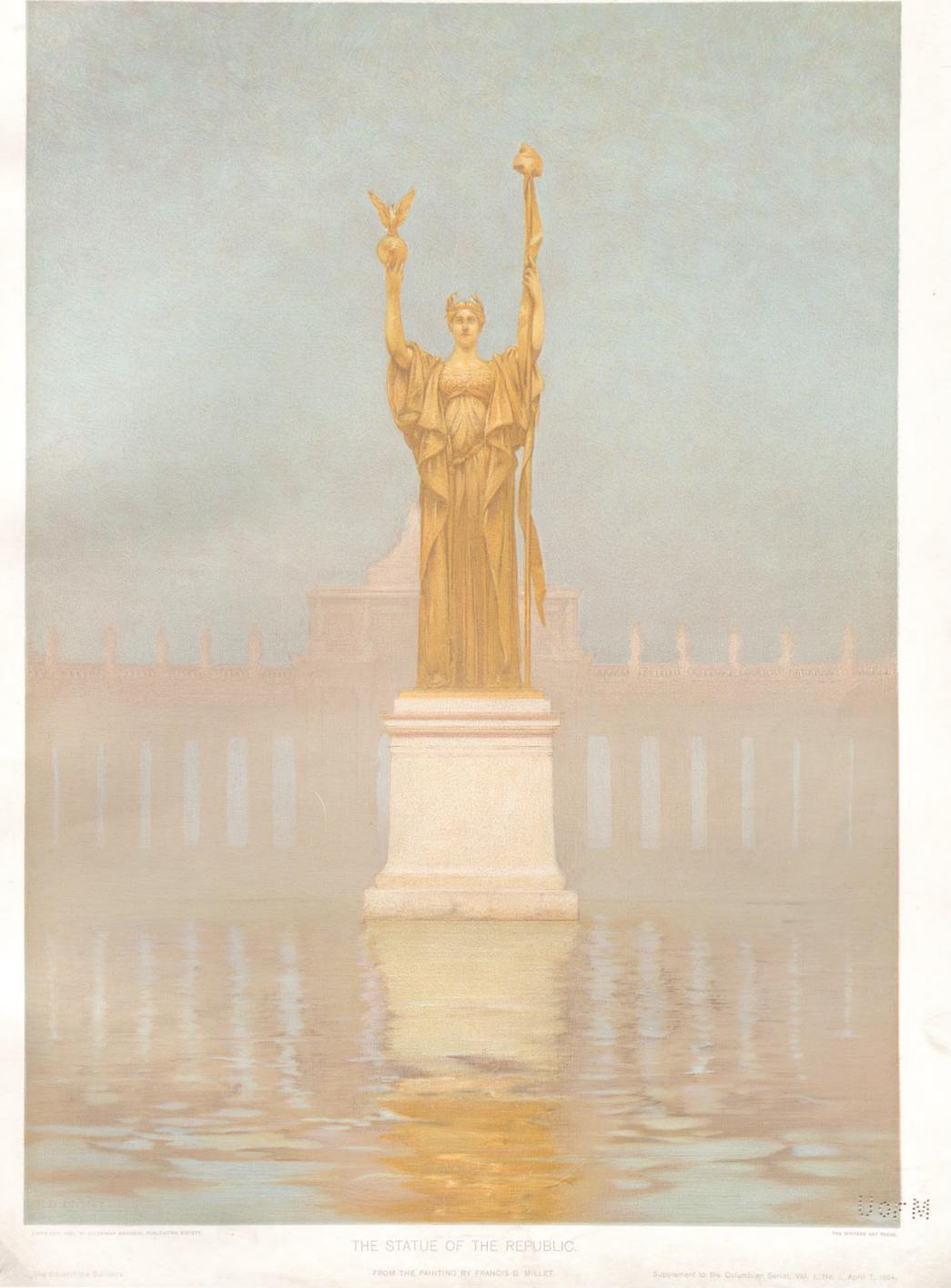
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# THE BOOK OF THE BVILDERS

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the centenary of the discovery of America by Columbus; and on July 31 Senator George F. Hoar, of Massachusetts, presented to the Senate at Washington the suggestions of a Board of Promotion organized in New England for the purpose of securing congressional action on a proposition to hold a World's Fair in Washington in 1892. A joint congressional committee of fourteen was appointed, who reported favorably, and there the matter dropped.

Active and concerted agitation began in the summer of 1889 in two great commercial centers. The Chicago press urged the consideration of the subject, and the City Council, on July 22, 1889, instructed Mayor Cregier to appoint a committee of one hundred citizens to visit Washington with the



THE FIRST CUTTING FOR A LAGOON.

avowed intention of securing from Congress the location of the World's Fair at Chicago. Three days later Mayor Grant, of New York, called a conference of prominent citizens, and a committee of sixty was appointed to secure the Fair for the metropolis. St. Louis and Washington also began to urge their claims, and the struggle for the location was soon carried



THE FIRST DITCH.

THE SITE OF AGRICULTURAL ANNEX.

on in the national capital with almost passionate fervor. On August 15 the Secretary of State, at Springfield, Illinois, granted to DeWitt C. Cregier, Ferdinand W. Peck, George Schneider, Antony F. Seeberger, William C. Seipp, John R. Walsh, and E. Nelson Blake a license to open subscription books for a proposed corporation, entitled "The World's Exposition of 1892, the Object of which is the Holding of an International Exhibition or World's Fair in the City of Chicago and State of Illinois, to Commemorate, on its Four Hundredth Anniversary, the Discovery of America." This organization changed its name in the following June to the "World's Columbian Exposition," but otherwise remained practically the same during the struggle for the location, the building of the Fair, and the operative period.

The chief efforts of the preliminary organization were naturally in the direction of securing through its agents at the national capital the location of the Fair at Chicago, and, in order to be prepared for a favorable decision of Congress, a Committee on Sites was appointed and instructed to study the merits of available situations in or near the city. This Committee consisted

of Mayor Cregier, Judge Richard Prendergast, Mr. John R. Walsh, Mr. Joseph Medill, and Mr. Victor Lawson. Mr. D. H. Burnham was retained as professional adviser, and it was in this connection that his services for the Exposition began, for he attended the meetings and furnished at various times plans and estimates as they were required. The labors of this Committee bore little fruit worthy of record beyond the desultory ventilation of the merits of different sites suggested; but the questions which came before it for consideration grew in importance every day, and by the time the permanent organization was formed there were



THE FIRST DREDGE, AUGUST, 1891.

half a dozen distinct groups of men, each energetically, and often aggressively, urging the claims of different sites about the city.

Meanwhile the members of the Citizens' Committee in Washington were carrying on their crusade with a persistent activity that gave courage and confidence to their supporters at home, and impressed Congress with the belief that the Fair, if held at Chicago, would be built and managed with an energy no less intense and effective than that displayed by the men who were making such an earnest effort to secure it for their city.

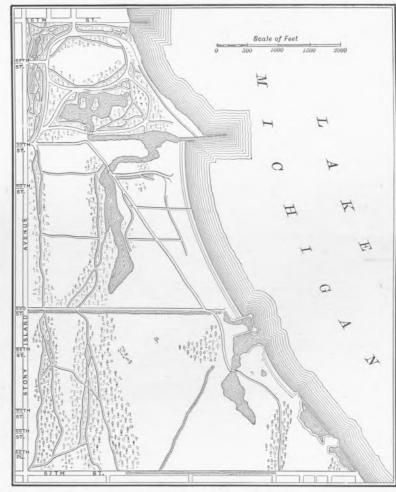
The first World's Fair bill was introduced in the Senate by Senator Cullom, of Illinois, on December 19, 1889, and on January 24, 1890, the House of Representatives practically settled the burning question at a single sitting, and gave the Fair to Chicago. So much time



THE SITE OF ELECTRICITY BUILDING.

had been spent in the struggle over the location that it was evident it would be absolutely impossible to complete buildings adequate to the occasion, or to secure foreign exhibits in time to open the Exposition in May, 1892; and, consequently, Congress, on March 24, 1890, voted to postpone the opening until May 1, 1893. A day or two before this bill passed, or just one month from the day the Fair was voted to Chicago, the entire amount of capital called for, five million dollars, was fully subscribed; and on April 4 the first meeting of stockholders was held and a board of directors was elected. On the last day of the same month Mr. Lyman J. Gage was elected President of the permanent organization, Mr. Thomas B. Bryan and Mr. Potter Palmer were chosen First and Second Vice-president, respectively, temporary committees were discharged, and a permanent Committee on Grounds and Buildings was appointed to have juris-

diction in all matters pertaining to grounds, leases, engineering, designs, plans, construction of buildings and works, maintenance of buildings and grounds, organization of guard, police protection and fire departments, gas, electric lighting, and water supply, telegraph and medical service, applications for space, insurance, etc. This Committee comprised the following gentlemen: Mr. DeWitt C. Cregier, Chairman, Mr. Edward T. Jeffery, Mr. Owen F. Aldis, Mr. Eugene S. Pike, Mr. George R. Davis, Mr. Potter Palmer, Mr. Charles H. Schwab, and Mr. Lyman J. Gage, ex-officio. Mr. Palmer resigned after a short service and Mr. Robert A. Waller was elected to fill the vacancy. Various other changes were made in the constitution of this important body from time to time as its responsibilities increased and its duties became more and more onerous.



JACKSON PARK, SEPTEMBER, 1890.



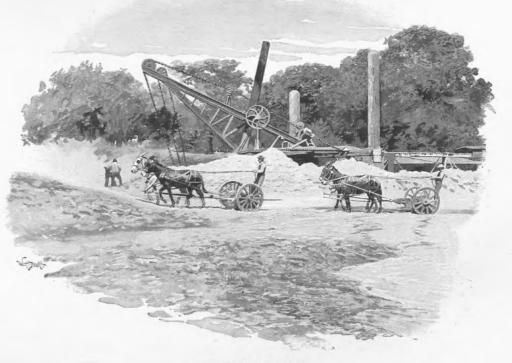
LAYING CONSTRUCTION TRACKS.

When this working committee began its sittings there seemed every reason to believe that the active work of building the Fair would be undertaken without much delay. Various factors of the situation combined, unfortunately, to defer the beginning of construction work, and, indeed, it was not until ten months later that the architects of the principal buildings received their orders to proceed to make plans for the same. The main trouble was the choice of

a site, and this difficulty was aggravated and complicated by the appearance on the field of action of the newly constituted National Commission. This body assembled in June, organized, elected the Honorable Thomas W. Palmer, of Michigan, President, Mr. John T. Dickinson, of Texas, Secretary, and in September chose Colonel George R. Davis, of Chicago, Director-General.

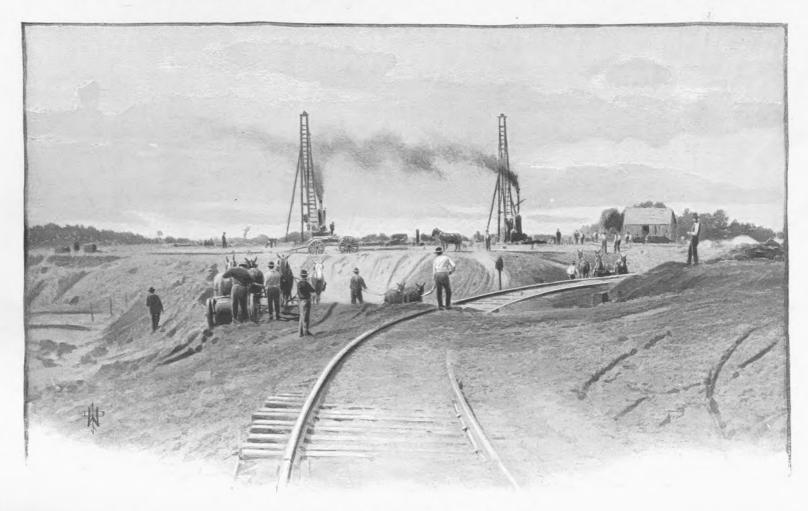
The most important duties of the Commission, as defined by the Act of Congress, were the approval of the site for the Exposition and of the plans of the buildings selected by the local corporation; the determination of the plan and scope of the Exposition; the classification of exhibits; the allotment of space; the appointment of judges and of the Board of Lady Managers; the official intercourse with exhibitors and foreign representatives; and the dedication of the buildings. It was prohibited from incurring liabilities beyond the sum of one million five hundred thousand dollars, which was to include the cost of the United States Government Building. The Illinois corporation, on the other hand, was to provide the site and to raise

all the money necessary for the improvement of the grounds, the construction of the buildings, and the operation of the Fair. Further, it was to make its own rules and regulations, subject, nevertheless, to modification by a majority of the National Commission, so far as the exhibitors and the general public were concerned. This bicephalous organization spent much valuable time during the whole course of its existence trying to harmonize its unrelated elements, and the history of the struggle over the selection



RAISING THE GRADE.

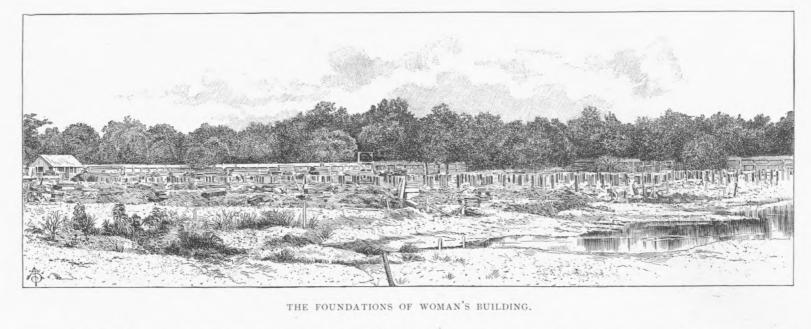
of a site, the details of which may be properly omitted in this chronicle, was repeated at intervals, in a more or less distorted form, to the very close of the Exposition. The Directors were in a difficult enough position without the added burden of dealing with the National Commission, for the stockholders they represented were, as before mentioned, divided into parties—factions is scarcely too strong a word—each with special claims and demands, and all equally active and persistent. With great tact, and by an accompanying expenditure of precious time, the Directors succeeded at last in eliminating from the list all the sites proposed, except the Lake Front and Jackson Park with the Midway Plaisance. The choice of these two places as a dual site apparently settled the question for a time, although there were several convulsive revivals of the claims for Washington Park and for the rejection



"ADMINISTRATION HILL," AUGUST, 1891.

of Jackson Park, and, even as late as October 21, 1890, bids for filling in eighty acres of the water along the Lake Front were advertised for, and well into the following winter plans were discussed for the location at that place of the Fine Arts Palace, of the Decorative Art Palace, of the Building for the Electrical Display, of the Music Hall, and of the Water Palace.

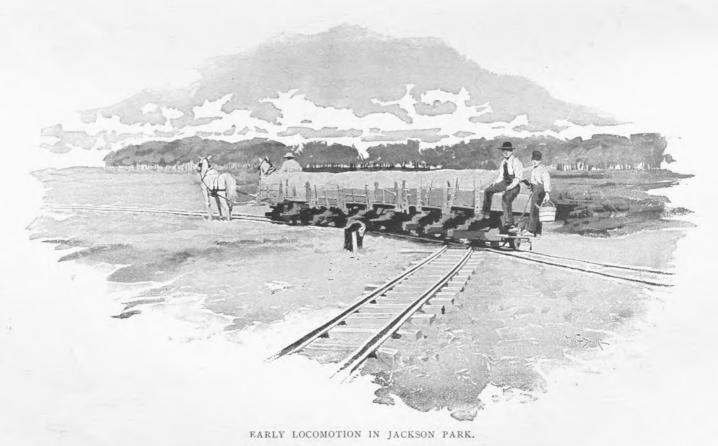
The consideration involved in the selection of a site demanded at the beginning the judgment of an expert, but it was not until several weeks had been passed in fruitless discussion that the Directors decided to call to their assistance Mr. Frederick Law Olmsted, who had previously been engaged on the park systems of Chicago and a score of years earlier had made plans for the conversion of Jackson Park into a public pleasure-ground. Mr. Olmsted with his partner, Mr. Henry Sargent Codman, in response to an invitation from Mr. James W. Ellsworth, representing the Board of Directors, visited Jackson Park early in August, 1890, and in a brief communication to the Board pointed out how the improvements of the



ground already in progress could be carried out in such a way as to prepare the rough tract for the uses of the Exposition. They suggested that by dredging out the low portions and using the material for elevating the adjoining areas not only proper building sites could be readily made, but an effect of intricacy could be produced by numerous bays and islands so planned that the play of light and shadow between masses of foliage, aided by reflections in the water, would secure the charm of landscape mystery in an unusual degree.

The suggestions embodied in the report did not at first command the attention of the majority of the Directors, but the picture drawn with those few lines grew in the imaginations of the members of the Board who were seriously studying the subject, and a sentiment was gradually developed which led to the choice of Jackson Park as the site of all the buildings, and culminated finally in the realization of the picture with added glories and greater beauties than were in the minds of the two men who first conceived the grand features of its composition.

Frederick Law Olmsted & Company were shortly afterwards appointed Consulting Landscape Architects, and the practical working force was further strengthened by the selection of Burnham & Root as Consulting Architects, and Mr. A. Gottlieb as Consulting Engineer,



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THE FOUNDATION OF ADMINISTRATION BUILDING, SEPTEMBER, 1891.

forming the nucleus of what became later the Construction Department. The fascinations of the scheme proposed by the Landscape Architects found enthusiastic recognition among the men intimately associated with them in the preliminary study, and, although the question of site was far from settled, the Consulting Architects laid out many tentative plans during the summer and autumn, striving, without success, to obtain from the National Commission and the Directors the number, the size, and the purpose of the buildings to be erected.

In October Mr. Burnham was appointed Chief of Construction. Mr. Root continued

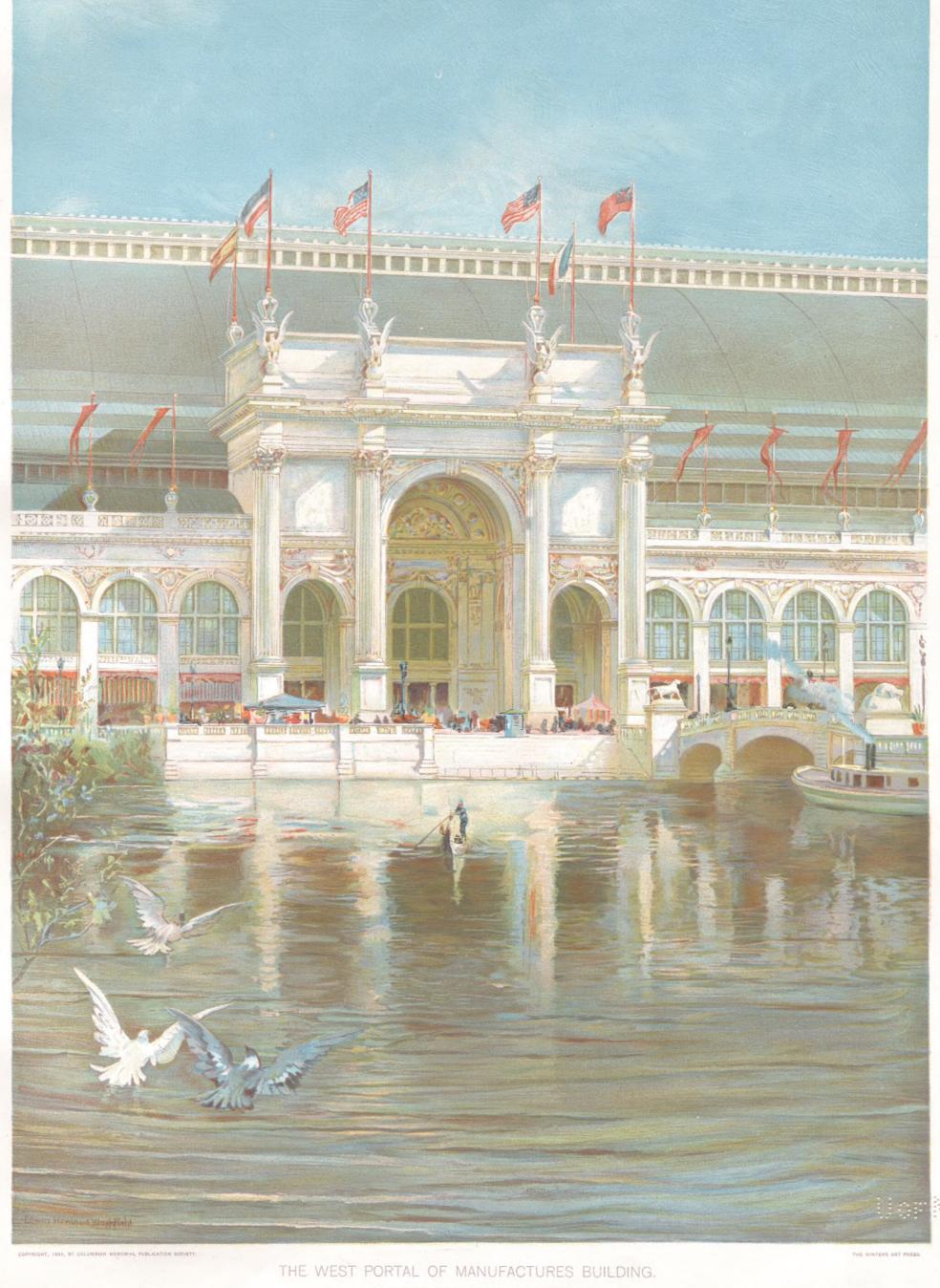
to act in the capacity of Consulting Architect, and on November 20, 1890, the Consulting Board, as the small organization was called, received instruction to provide, within twenty-four hours' time, plans and specifications for buildings to be located in Jackson Park and on the Lake Front, basing the plans on the classification list of exhibits, which was then, for the first time, produced.

The larger part of the site to be dealt with was a swampy, sandy flat, liable at times to be submerged by the lake. This waste ground was broken by several low ridges, which had originally been sand-bars thrown up by the waves. Along these elevations were scattered groups of trees, most of them oaks, of stunted habit because of the sterile and water-soaked soil in which they had grown and on account of the extreme exposure to frigid winds from the lake to which they had been subject up to a late period every spring. Jackson Park inclosed an area of 620.85 acres, and the Midway Plaisance an area of 66.50 acres.



SUNDAY IN JACKSON PARK.

THE SOUTH END OF WOODED ISLAND, JULY, 1891. FROM THE PAINTING BY H. BOLTON JONES.



FROM THE PAINTING BY EDWIN H. BLASHFIELD.

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The Book of the Builders



The Book of the Builders.

Supplement to the Columbian Serial, Vol. I, No. 2, April 21, 1894.

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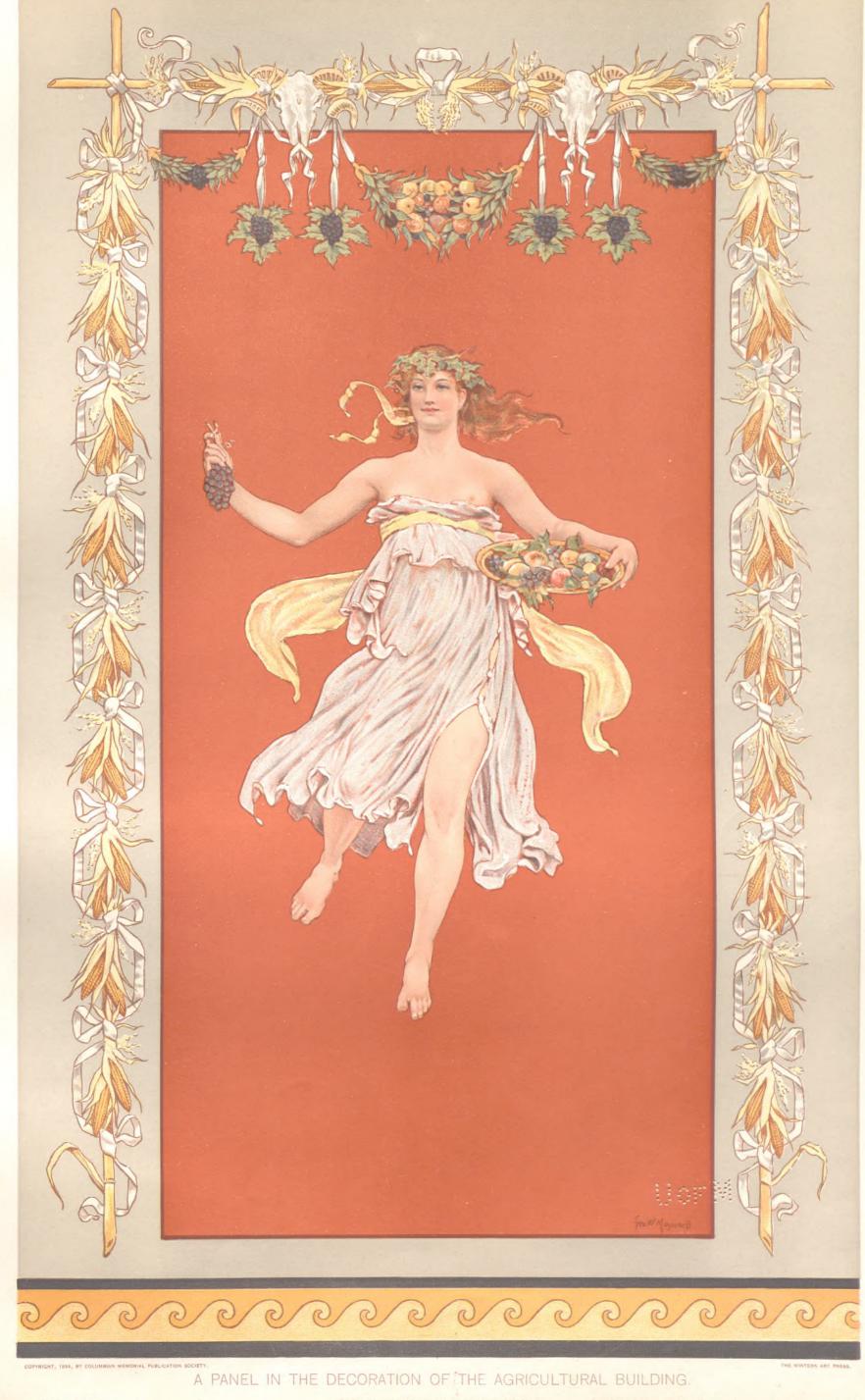
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JACKSON PARK, JANUARY, 1891.





The Book of the Builders.

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Supplement to the Columbian Serial, Vol. 1, No. 2, April 24, 1894.

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WORLDS COLVMBIAN EXPOSITION

## THE BOOK OF THE BVILDERS

THE COLUMBIAN MEMORIAL PUBLICATION SOCIETY, PUBLISHERS, SPRINGFIELD, OHIO.

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Original from UNIVERSITY OF MICHIGAN It was obviously impossible to prepare in so short a time a report which should satisfy all the requirements of the case, and the document which was submitted to the Directors on the following day was quite properly prefaced by an allusion to the fact that, at a stage of the undertaking of the Paris Exposition of 1889 approximately corresponding to that which had been reached

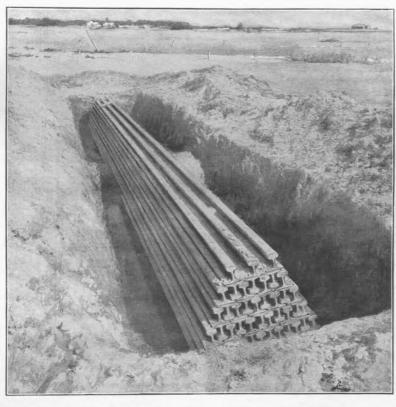


LOCATING THE MANUFACTURES BUILDING.

in the development of the World's Columbian Exposition, a large, well-organized, and accomplished force of designers had already been at work a whole year.

The leading idea to be considered was that suggested in the first communication of Mr. Olmsted and Mr. Codman, namely, that there should be a system of navigable water-ways, to be made by dredging-boats working inward from the lake through the lowest parts of the site, the earth lifted by the boats to be so deposited as to add to the area and increase the elevation of the higher parts, so that they would, by this means, become better adapted to pleasure-ground purposes and would afford suitable sites for the buildings of the Exposition.

The report was accompanied by a crude plot, on a large scale, drawn on brown paper, mostly with a pencil in the hand of Mr. Root, whose fertile imagination and co-ordinating talent were of invaluable service to the result. This plot was based on sketches made on the grounds by Mr. Codman and indicated the manner in which the leading idea could be worked out suitably to the purposes of the Exposition without sacrificing any advantages of the site for a park, comprising, also, the following leading features of design: That there should be a great architectural court with a body of water therein; that this court should



FOUNDATION TEST FOR THE ADMINISTRATION BUILDING.

serve as a suitably dignified and impressive entrance hall to the Exposition, and that visitors arriving by train or by boat should all pass through it; that there should be a formal canal leading northward from this court to a series of broader waters of a lagoon character, by which nearly the entire site would be penetrated, so that the principal Exposition buildings should each have a water as well as a land frontage, and should be approachable by boats. The essential poin' of the general design was that the northern inlet, already existing, should be further extended so as to inclose a tract of about fifteen acres in area with extensive clusters of large trees, thus forming an island of irregular shape and

diversified surface, supplying an episode of scenery in refreshing relief to the grandeur of the buildings, and by its sylvan qualities contrasting agreeably with the crowded and busy aspect which was to be looked for almost everywhere else within the grounds. With that object it was suggested that neither within the limits of the island, nor in close association with it, should there be placed any structures which, by their size, their architectural design, or the purposes for which they were intended, might interfere with the motive thus proposed to be the controlling one in that locality. As the water in the lagoons would be subject to considerable fluctuations, the shores of the island should be occupied by a selection of such aquatic plants as would endure submergence and yet survive an occasional withdrawal of water from their roots.



BUILDING ARTIFICIAL ISLANDS.

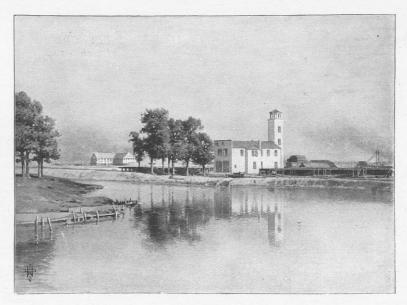
The banks of the landlocked bodies of water should be finished as might be appropriate to the various localities through which they might pass. Thus, broad terraces and landings would be needed for both the Fisheries and the Government exhibits where the lagoon opens into the lake, while the shores of the island and adjacent terraces should have informal outlines masked with foliage. The borders of the canals and basin should be treated formally with embankments surmounted by parapets or balustrades, with boat-landings at intervals. Another important element of the plan was the proposition to concentrate, as far as possible, all the lines of transportation to the Fair in such a way that the visitors should enter the Grand Court through the Administration Building, and receive their first impressions of the Exposition at the point where the open spaces would afford ample room for large crowds, and where the buildings and accessories would combine to make a majestic and sumptuous composition. The main buildings were disposed on the plot very nearly as they were finally

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#### THE BOOK OF THE BUILDERS

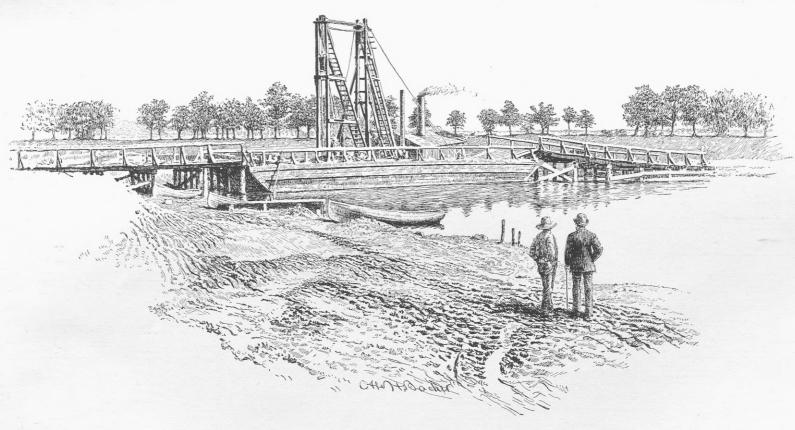
determined upon, with the exception that, since it was then proposed to build the Art Palace on the Lake Front, the Horticultural Building was located in the improved portion of the Park, and the Agricultural Building was placed in the southwest portion of the grounds. The group of large structures around the basin was to consist of the Administration, Machinery, Manufactures, Mining, and Electricity buildings, and was planned to form an impressive composition with distinct unity of design. An elevated intramural electric railway, a general system



FIRST FIRE-ENGINE HOUSE, SEPTEMBER, 1891.

of electric lighting, wheel chairs, electric fountains, a water-gate at the east end of the basin, a long pier extending into the lake, and many other features which formed part of the final plan were briefly recommended in this report. No detailed suggestions were made in regard to the Lake Front, as no information was to be had regarding the area of ground available there for Exposition purposes.

The brown-paper plot above referred to, with a concise written specification almost as sketchy in character as the drawing itself, was adopted by the Board of Directors, on December 1, 1890, as the plan of the Exposition; and this action being approved shortly afterward by the National Commission, orders were given to proceed with the execution of the design.

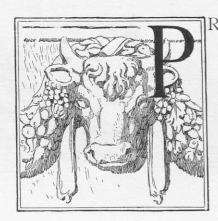


PONTOON BRIDGE TO WOODED ISLAND.



CONSTRUCTION OF THE BATTLE-SHIP ILLINOIS.

### CHAPTER II



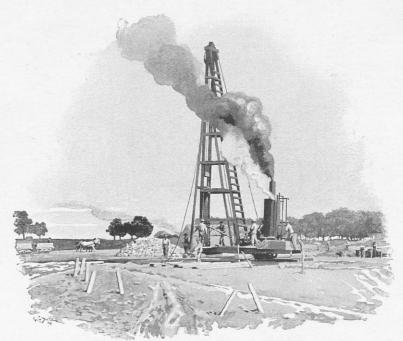
ROBABLY no greater innovation was ever made in the recognized course of action in such cases than that suggested by Mr. Burnham, in a memorial presented to the Consulting Board and then indorsed and submitted to the Grounds and Buildings Committee. The memorial reviewed the situation in terse and emphatic language and recognized fully the importance of the decision of the Committee, not only in its direct effect upon the artistic and commercial success of the Exposition, but also as a precedent for the

future action of the national Government, of corporations, and of private individuals. The following methods of procedure were suggested for consideration and were discussed in turn: First, the selection of one man to whom the designing of the entire work should be intrusted; second, competition made free to the whole architectural profession; third, competition among a select few; fourth, direct selection.

The arguments against the first three methods were the shortness of time, the danger of inharmonious results, and the sterilizing effect on artistic impulse which would not fail to follow the absence of friendly co-operation. The adoption of the fourth method was urged, because by the selection of a certain number of architects, each chosen for such work as would be most nearly parallel with his best achievements, there would be created a Board of Architects working harmoniously for a general result, conferring on all points of common interest, and studying together all the elements of the problem, while stimulated individually

by a broad spirit of friendly emulation sure to be developed by the unusual opportunities for artistic effort. The memorial was signed by D. H. Burnham, Chief of Construction; John W. Root, Consulting Architect; A. Gottlieb, Chief Engineer, and F. L. Olmsted & Company, Landscape Architects, and was laid before the Committee on December 8.

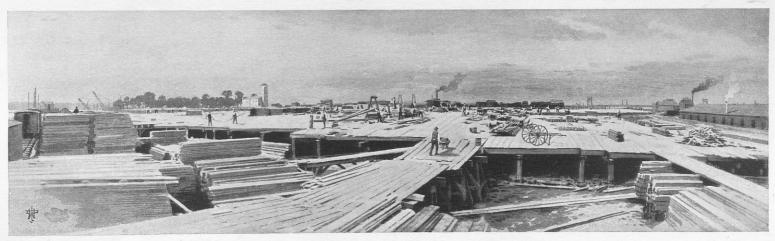
It was hardly to be expected that so radical a departure from ordinary methods would receive unqualified approval, but the Committee adopted the suggestions so far as they concerned the design of the buildings around the Grand Court, and Mr. Burnham



THE SITE OF THE HORTICULTURAL BUILDING.

at once chose Mr. Richard M. Hunt, Mr. George B. Post, and McKim, Mead & White, of New York; Peabody & Stearns, of Boston, and Van Brunt & Howe, of Kansas City, all of whom accepted the appointment with enthusiasm and agreed to meet in Chicago at an early date. Meanwhile the Committee continued to struggle with the new idea, and the adherents to the old policy of competition, as well as those who strongly favored the employment of Chicago architects exclusively, continued to combat Mr. Burnham's proposition; and for a while it seemed as if the scheme would have to be abandoned, notwithstanding the fact that the Committee had already indorsed the main idea by authorizing the selection of architects to design five of the ten buildings determined upon. The avowed and distinct purpose expressed in the memorial was the congregation of the best artistic talent in the country, without regard to residence; and the recognized talents of the Chicago men would have undoubtedly assured them a full representation in the Board of Architects even if the Committee had not, after much discussion, insisted upon the appointment of the remaining members of the Board from among the residents of the city. Accordingly Mr. Burnham selected Mr. S. S. Beman, Mr. Henry Ives Cobb, Mr. W. L. B. Jenney, Alder & Sullivan, and Burling & Whitehouse to complete the list of the ten designers of the principal buildings.

It is scarcely necessary to call attention to the fact that the purpose of the memorial met its fullest realization in the practical working of the plan of action and in the spirit



FLOOR OF MANUFACTURES BUILDING, LOOKING NORTH

created and nourished by the adopted method of procedure. The significance of the first visit of the architects to the site of the Exposition on January 10, 1891, has already been spoken of in the opening lines of this chronicle. They had come to Chicago with the intention of remaining but a day or two; but inspiration and enthusiasm seemed to grow with every hour of their stay, and a full week



THE SOUTH INLET AND SITE OF LA RABIDA.

was passed in the active discussion of plans, the adjustment of the position of buildings, the consideration of dimensions, and in the determination of various elements necessary to the harmony of the whole composition. It was not considered judicious to impose upon the designers any conditions in regard to style or proportions which might tend to hamper them in the free exercise of their artistic skill and invention; but, as harmony was an essential element of the composition of the Grand Court, it was suggested that the adoption of the classical style in that group of buildings would secure the desired result. Acting in the direction of this suggestion the Board agreed to fix the height of the cornice of these buildings at sixty feet from the ground. The Chief of Construction, acting with the authority of the Committee, made the following apportionment of the work, and the architects were constituted an Advisory Board, subject to call at any time. To design the building for the Administration, Mr. Richard M. Hunt; for the Agricultural Exhibit, McKim, Mead & White; for the Electrical Exhibit, Van Brunt & Howe; for the Fisheries Exhibit, Mr. Henry Ives Cobb; for the Horticultural Exhibit, Mr. W. L. B. Jenney; for the Machinery Exhibit, Peabody & Stearns; for the Manufactures and Liberal Arts Exhibit, Mr. George B. Post; for the Mines and Mining Exhibit, Mr. S. S. Beman; for the Transportation Exhibit, Adler & Sullivan; for the Venetian Village, a group of buildings which it was then proposed to erect in the lake in front of the Grand Court, Burling & Whitehouse; and for the terraces, the walks, the grass plots, and, indeed, for everything connected with Landscape Architecture, F. L. Olmsted & Company.



FLOOR LAYING, MANUFACTURES BUILDING.

A little later Holabird & Roche were selected as architects of the Live Stock Exhibit, and at the orders of the Grounds and Buildings Committee a competition was instituted between women architects for the selection of a designer for the Woman's Building, and Miss Sophia G. Hayden, of Boston, was



A FLOATING BOARDING-HOUSE.

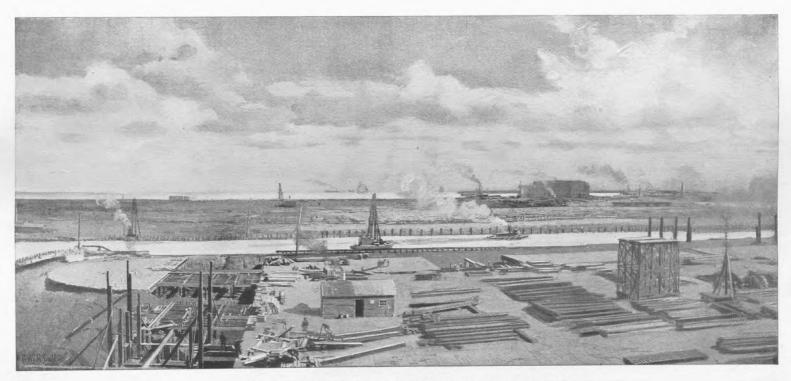
chosen for this work. Still later in the history of construction Mr. Charles B. Atwood, acting in the capacity of Designer-in-Chief, made the designs for the Art Building, the Peristyle, the Terminal Station, and several smaller buildings, and Mr. Francis M. Whitehouse was assigned to the Festival Hall after the Venetian Village had been abandoned. The Government Building was planned by the Supervising Architect, Mr. J. H. Windrim, and the work was completed under the direction

of his successor, Mr. W. J. Edbrooke. In common with the designers of the State buildings, these gentlemen took no part in the work of the Advisory Board.

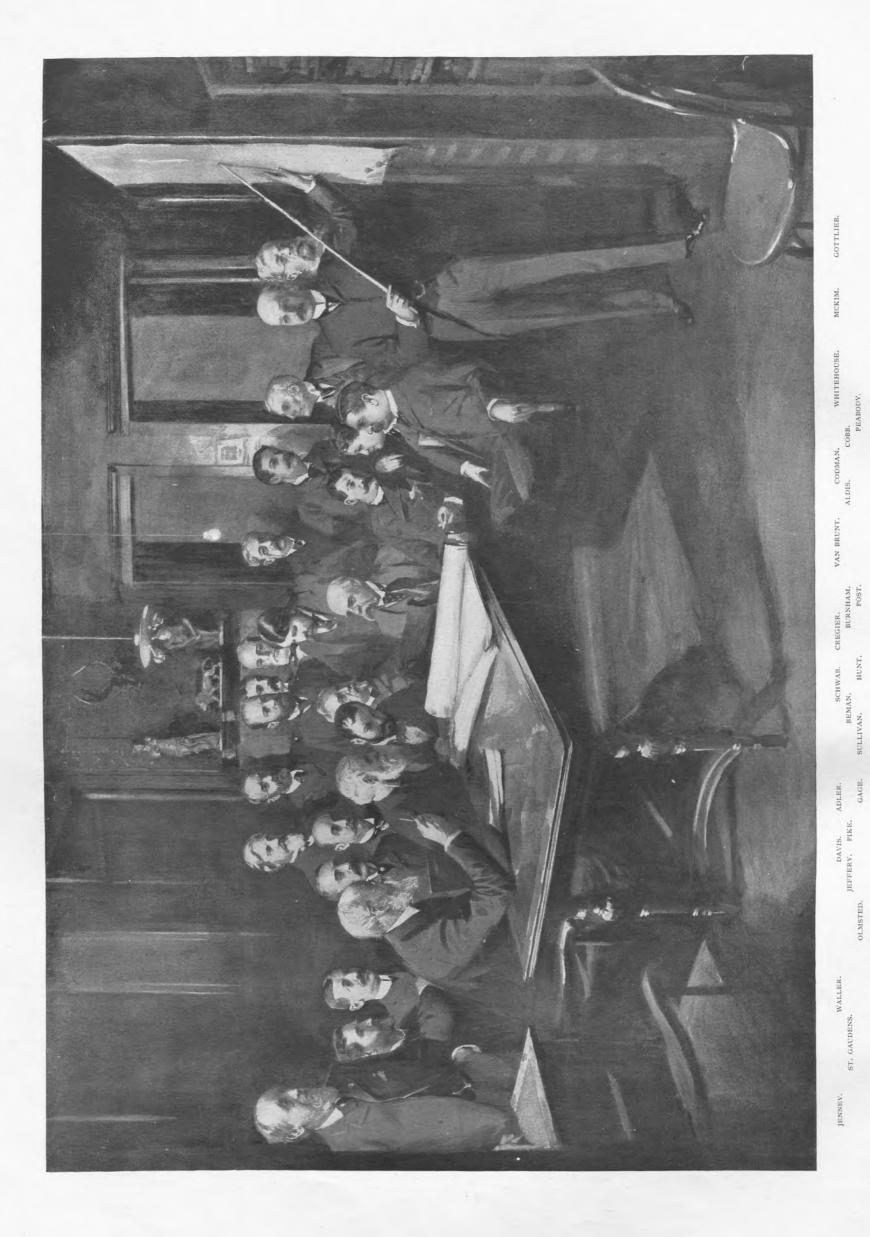
The architects in conference changed the first plan in several important particulars, notably in the arrangement of the buildings around the Grand Court, and also re-established each axis of the plan in such a manner as to extend the vistas, to heighten the effect of the buildings, and to enhance the beauties of the water features. It was recommended that, in order to save unnecessary expense and to avoid the danger of architectural deformities, the buildings should be reduced in size to the smallest estimate of possible requirements, and that provision should be made for extension by the erection of additions of economic character, to be provided for in the original designs as parts of the buildings, not as separate annex structures.

When the architects adjourned it was with the understanding that they should present their designs a month later.

This first battle in the cause of high art was not won without a great struggle, and the joy of triumph would have been complete but for the loss of one of the leaders in the march of progress, a man whose talents had given him a high rank in his profession, whose sympathetic nature had endeared him to all his collaborators, and whose co-operation



THE FLOOR OF ELECTRICITY BUILDING, FROM THE FIRE TOWER.



MEETING OF THE BOARD OF ARCHITECTS AND THE GROUNDS AND BUILDING COMMITTEE, FEBRUARY 24, 1891 FROM THE WATER-COLOR PAINTING BY W. T. SMEDLEY.

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FROM THE STEPS OF THE COLUMBIAN FOUNTAIN.

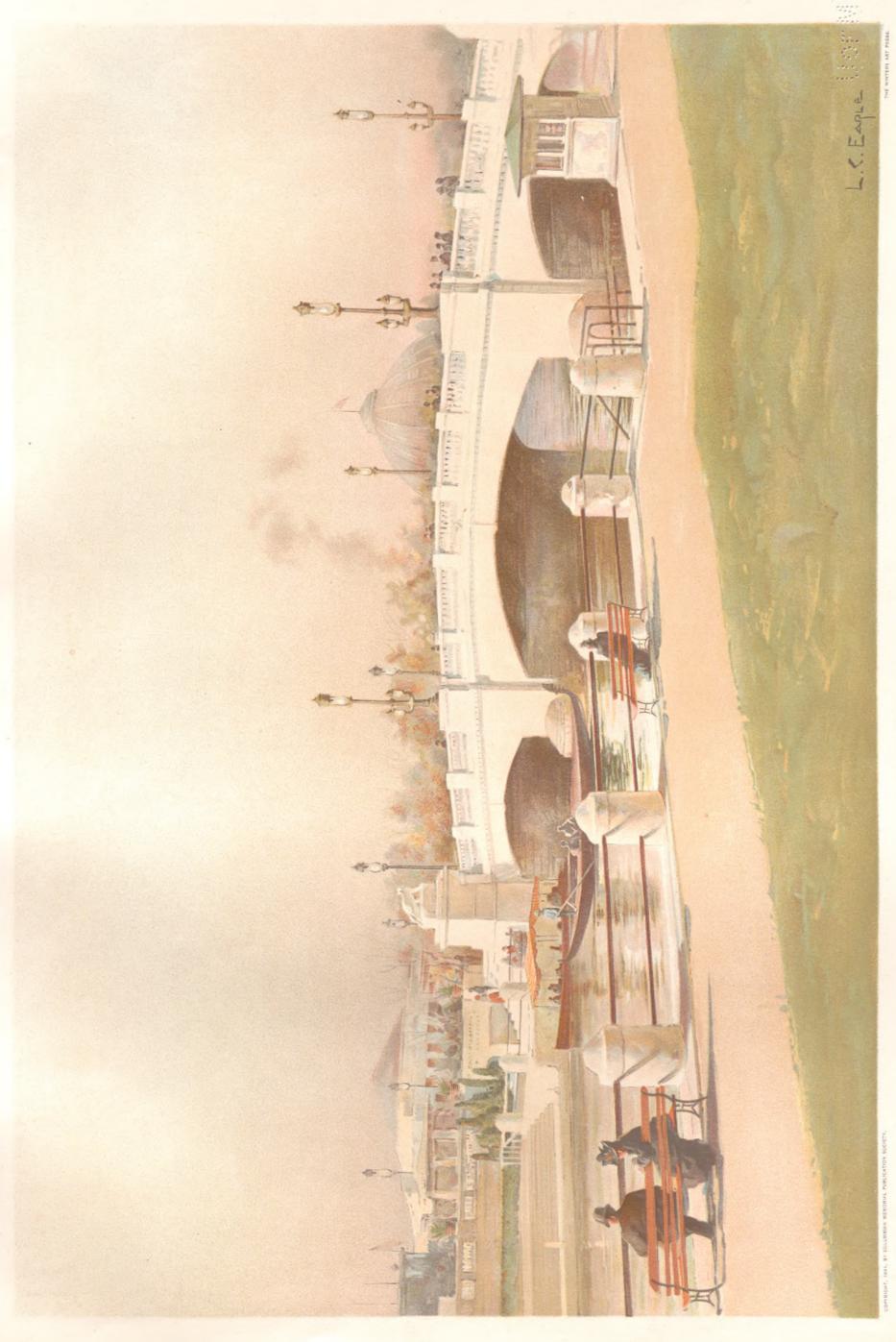


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THE NORTH CANAL BRIDGE.

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SOUTH END OF WOODED ISLAND (VIEW FROM TRANSPORTATION TERRACE.)

PUBLISHED BI-WEEKLY.

No. 4.

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WORLDS COLVMBIAN EXPOSITION

# THE BOOK OF THE BVILDERS

BY

DANIEL HVDSON BVRNHAM

AND

FRANCIS DAVIS MILLET

THE COLUMBIAN MEMORIAL PUBLICATION SOCIETY, PUBLISHERS, SPRINGFIELD, OHIO.

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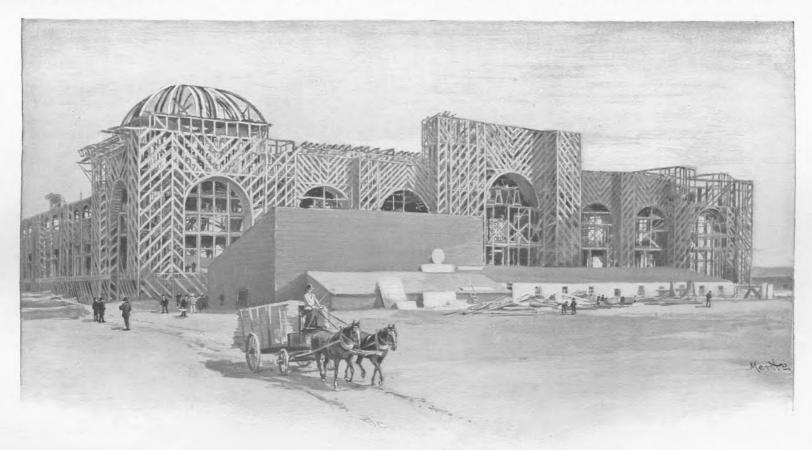
Original from UNIVERSITY OF MICHIGAN had been invaluable. The Consulting Architect, Mr. John Wellborn Root, was taken ill and died at his home in Chicago while the Advisory Board was holding its first meetings. His unerring artistic instinct, his fertility of invention, and his vigorous enthusiasm left indelible traces on the work carried on after his brief service was ended, and the large lines of the general design, which were due as much to him as to any



THE LAGOON AND HUNTER'S ISLAND, FROM THE FIRE TOWER, OCTOBER, 1891.

due as much to him as to any one else, were, practically, never altered.

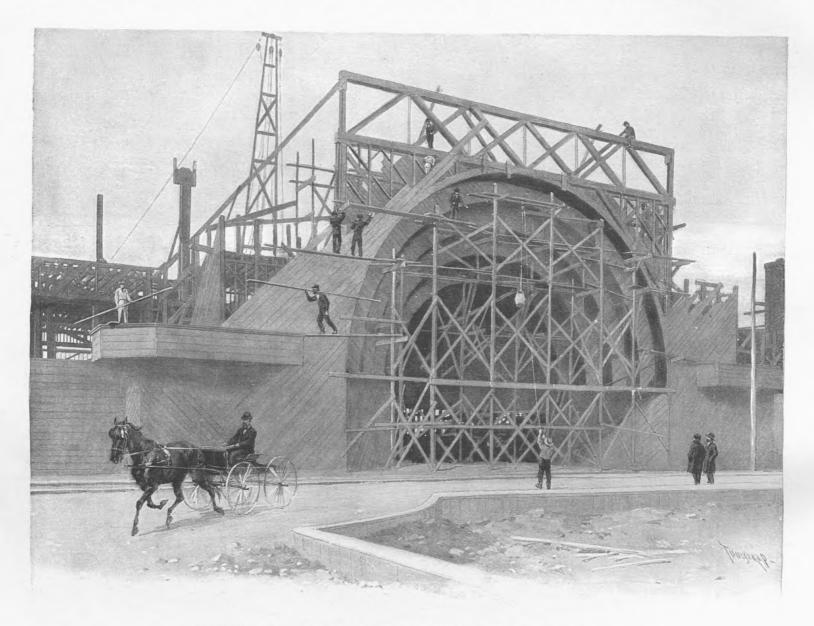
While the Architects were busy with their designs work was begun on both the sites. Early on the morning of January 27 a few men appeared on the Lake Front and began preparations for the erection of a temporary office building for the Construction Department. Some notice of this had been made public, and a crowd of a thousand or more spectators gathered to watch the operations. The fever of excitement, inoculated by the first tangible proof of the beginning of actual work of building the Fair, spread through the city with the rapidity of an evil rumor, and not only cheered and encouraged the active supporters of the great undertaking but awakened the dormant interest of those who had hitherto kept somewhat in the background. Labor unions met and passed strong resolutions against the employment of non-union men; advocates of closing the Exposition on Sunday began to present arguments and draw up petitions; the property owners along the Lake Front filed a



THE FRAME-WORK OF THE SOUTH END OF MINES AND MINING BUILDING.

bill to restrain the Directors from erecting buildings there; the Grounds and Buildings Committee was bombarded with projects for novel structures; and the officials were besieged by urgent applications for salaried positions.

The first grade stakes had been planted in Jackson Park on December 5, and bids for dredging and grading had been advertised for shortly after that date; but nothing further was done until February 11, when a gang of fifty Italian laborers was set to work to dig a trench for surface drainage on the site of the Agricultural annex, and tents to shelter the men were pitched in the grove of trees along the ridge which afterward became the Wooded Island. In the course of a day or two the comedy which began on the Lake Front was



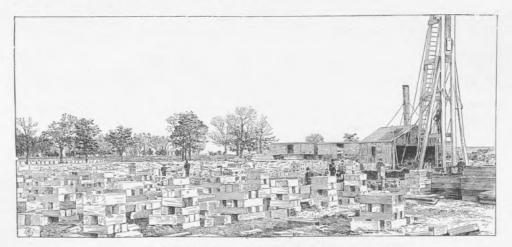
THE FRAME-WORK OF THE GOLDEN DOOR OF TRANSPORTATION BUILDING,

continued in Jackson Park, and in this second scene a body of four or five hundred sewer diggers assembled and with rough hilarity drove the Italians from their first ditch. Police protection put a stop to further trouble.

Jackson Park became a center of interest, especially after the Lake Front site was abandoned on February 20, and the necessity of inclosing the grounds was soon apparent. A contract was accordingly made to build a simple board fence eight feet high around the unimproved portion of the Park, and this barrier, which was finally extended around the entire area, including the Midway Plaisance, served its purpose through the whole Exposition. After its erection no serious labor conflicts occurred, although there were several large and

hampering strikes during the period of construction.

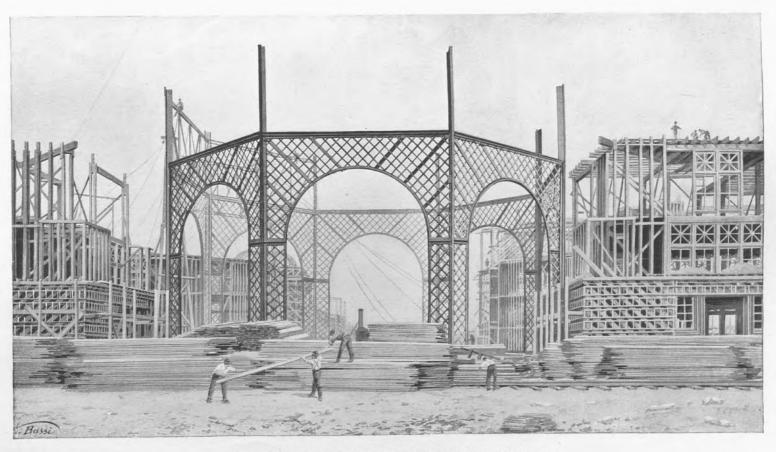
The Architects needed no greater spur to effort than the stimulus of the splendid opportunity joined with the rejuvenating spirit of friendly co-operation, and those engaged in designing the buildings for the Grand Court met in New York,



THE FOUNDATIONS OF THE GOVERNMENT BUILDING.

discussed preliminary plans, and compared first sketches. At the very first meeting it was unanimously agreed to adopt the classical style as the one most appropriate to the accepted arrangement and best calculated to give that stateliness and grandeur of aspect which were essential to the success of the composition. Sufficient harmony in the main lines was already secured by the fixed height of the cornices, and no strident discord could result under this limitation if the principles of classical architecture were followed with fidelity. The question of exterior covering was easily and happily settled by the choice of staff, a mixture of plaster of Paris with fiber, which had the desirable qualities of cheapness, sufficient durability, and ease of manufacture. Indeed, the details of the classical architecture could be carried out on a temporary building in this material only, and the experience of other Expositions proved that the best results could be expected from its use.

The composition of the Grand Court had contemplated the extension of the vista to the lake by a group of buildings, to be called the Venetian Village, planned to occupy a position at some distance from the shore directly east of the basin, and this idea prevailed until the



THE CONSTRUCTION OF THE ADMINISTRATION BUILDING.

Architects met in Chicago on February 22, at the call of the Chief of Construction. The discussion of the plan of the Grand Court was the first one that came up, even taking precedence of the presentation of the sketches, for it was the general feeling that there should be some architectural feature at the east end of the Basin to balance the mass of the Administration Building, and that the Venetian Village would detract from the nobility of the composition. Various suggestions were offered, but none proved acceptable until Mr. Augustus St. Gaudens, who had been appointed Consulting Sculptor and was present in that

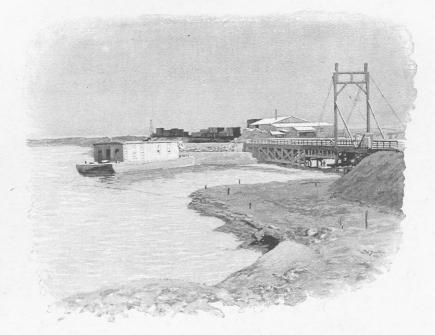


INTERIOR OF STAFF-CASTING WORKSHOP.

capacity, proposed that the east end of the Basin should be inclosed by a semicircular line of Corinthian columns, thirteen in number, bearing statues typifying the thirteen original States of the Union; that the Basin should follow this curve, and that a colossal statue of the Republic should rise from the water in the center of the semicircle. This scheme was adopted with emphatic approval and remained an accepted feature of the plan until the Peristyle was designed by Mr. Atwood some months later, as a substitute for the thirteen columns. The Venetian Village and the columns remained for a long time on record in the popular illustrations of the Fair, notwithstanding their brief existence in the plan.

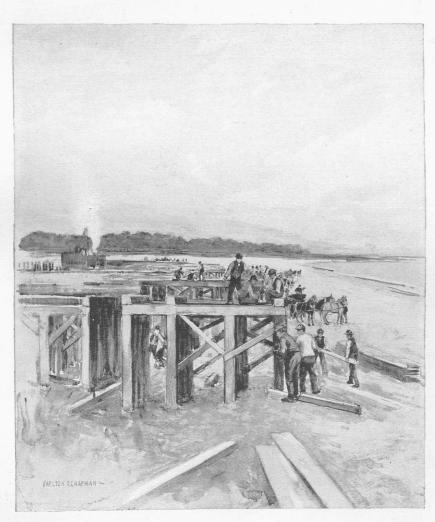
The Board of Architects presented their designs to the Grounds and Buildings Committee

in the library of Burnham & Root on Tuesday, February 24, and Mr. Hunt, although suffering from the gout, acted as chairman. During the entire day the designers, each in his turn, displayed their drawings and interpreted them as fully as time would permit. The sketches themselves were full of interest, and the scene was at once dramatic and impressively significant. The intense expression on the faces of that group of thoughtful men, who studied the designs with keen and critical attention, proved their appreciation of the extent of the responsibili-



DRAW-BRIDGE OVER THE SOUTH CANAL.

ties they had accepted, and marked the high level of their devotion to the duties which accompanied these responsibilities. All realized that the artistic honor and dignity of the country were intrusted to their hands. All were thrilled by the instinctive feeling that this was an historical occasion. All were supported, encouraged, and stimulated by the sense of interdependence, and by the firm faith which comes from mutual confidence. It was the most notable event in the history of Art in this country, for it was the first realization of the highest aspirations of a new civilization through the noblest mediums of human expression, Architecture, Sculpture, and Painting. Drawing after drawing was unrolled, and as the day passed it was apparent that a picture had been forming in the minds of



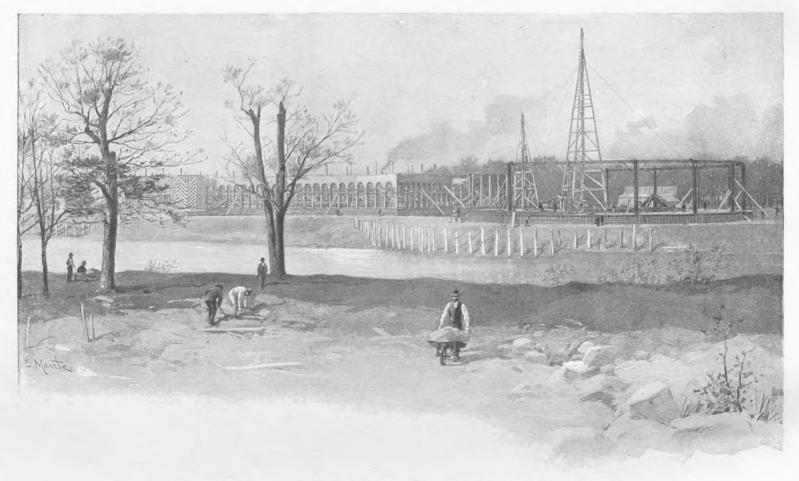
A BUSY CORNER OF THE MANUFACTURES BUILDING.

those present—a vision far more grand and beautiful than hitherto presented by the richest imagination. Long periods of thoughtful silence, when the tension of feeling was almost painful, succeeded each wave of hearty approbation of a new design, and when the last drawing had been shown, just as the dusk of evening fell and the conference adjourned, the voice of Mr. Gage, tremulous with emotion, broke the almost solemn quiet with these words: "You are dreaming, gentlemen. May your visions only be realized."

The following day the designs, already indorsed by the Directory, were approved by the National Commission.

The plan of the Exposition as agreed upon by the Board of Architects and the Directory may be divided into seven distinct parts: First, the Basin and Canals

with their surrounding architecture of the classical style. In this every element was intended to enhance the dignity and high conventional quality of the design as a whole, and every object was carefully considered in relation to its surroundings. Second, the Wooded Islands, with their surrounding lagoons, where freedom in style of architecture was allowed but still a dignified repose and harmony of parts were insisted on. Third, the Government location, where both the United States and foreign nations erected their head-quarters, and where freedom of expression in architecture was allowed. Fourth, the Federal State location, where the Fine Arts Building required a high expression in architecture on the part of each State Commission, and which was carried out with varying success. Fifth, the Midway Plaisance, to which were relegated the villages of different nations and many important concessions, including the Ferris Wheel, the Ice Railway, and other things of a



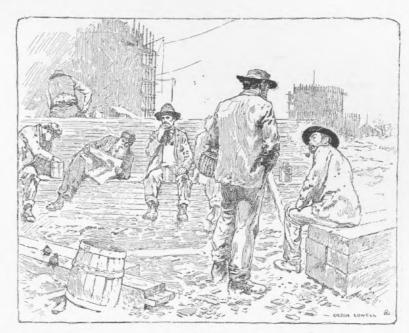
THE CONSTRUCTION OF THE FISHERIES BUILDING, DECEMBER, 1891.

purely popular order. Sixth, the Live Stock, La Rabida, Leather, Forestry, Dairy, and Anthropological buildings, the out-of-door agricultural exhibits, and the many ethnographical exhibits under Professor Putnam. Seventh, the region of Railroad Yards, Storage Houses, Bonded Warehouses, and Workshops of the Fair and concessionaires.

In the February meeting of the Architects there was little or no discussion of details, but all the leading features of the general plan were considered with such care and determined with such knowledge and forethought, that they were never afterward altered in any important particular. With the exception of the Art Building, which was designed later by Mr. Charles B. Atwood, the principal buildings were all studied in conference, so that each member of the Board had the benefit of the criticism and advice of the others, and enjoyed the full advantage of co-operation. The multitude of minor questions which properly came under the consideration of the Advisory Board were decided later as

necessity demanded or were left to the judgment of the Chief of Construction. It was not until a few weeks before the Fair opened that the complete plan was evolved and the final map made.

The duties of the Chief of Construction, as defined by the Grounds and Buildings Committee, were, broadly, to select, organize, and control all the forces needed to produce and operate the Exposition. These duties developed as time passed, and finally included the control of the following departments: Architecture, Engineering, Surveys and Grades, Landscape, Sculpture, Decora-



THE DINNER HOUR.

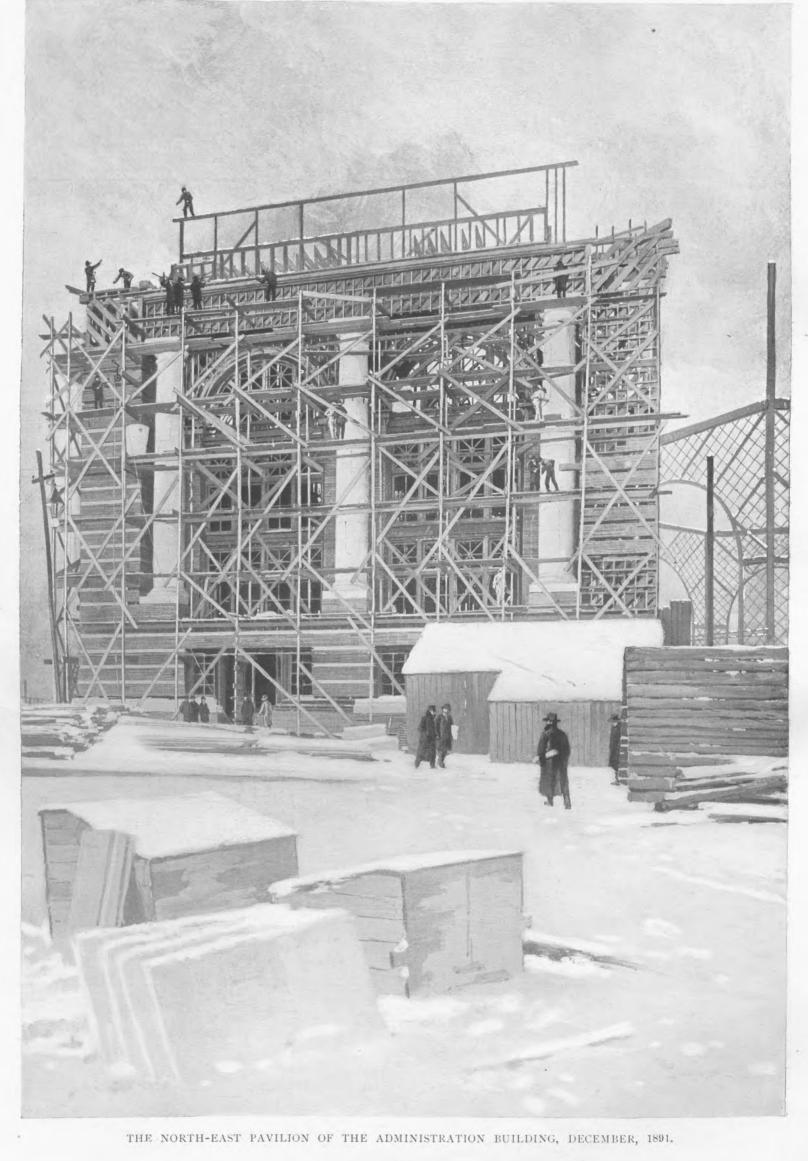
tion, Sewers, Water Supply, Transportation on Land and Water, Guard and Secret Service, Steam Power, Electric Power and Lights, Fire Department, Medical and Hospital Department, Janitors, Roads, Maintenance, Construction Accounts, Purchasing Department. The chiefs of these departments were appointed from time to time as occasion required, and the active organization, in March, 1891, consisted of the following men in addition to those originally appointed by the Directors: Ernest R. Graham, Assistant Chief of Construction; J. W. Alvord, Engineer of Surveys and Grades; W. M. Hughes, Engineer of Construction; William S. MacHarg, Engineer of Sewers, Water Supply, and Fire Protection; Frederick Sargent, Engineer of Electrical Appliances; J. C. Slocum, Mechanical Engineer; F. O. Cloyes, Chief Draughtsman; E. G. Nourse, Chief Assistant Engineer; Rudolf Ulrich, Landscape Superintendent. Mr. Gottlieb resigned his position as Chief Engineer in August following, and Mr. E. C. Shankland took charge of all construction work from that time.

With the approval and acceptance of the designs began the important work of preparation for the construction of the buildings. Working drawings, plans, and specifi-



OUTSIDE THE FENCE ON STONY ISLAND AVENUE.

cations were to be prepared with all haste; contracts were to be given out at the earliest possible moment, for the building season was fast approaching and delay meant disaster. The attic floor of the Rookery Building above the offices of Burnham & Root was converted into draughting rooms, and late in the month of March a Department of Architecture was organized. It comprised at first about forty men, and this number was increased to seventy during the autumn of the same year.



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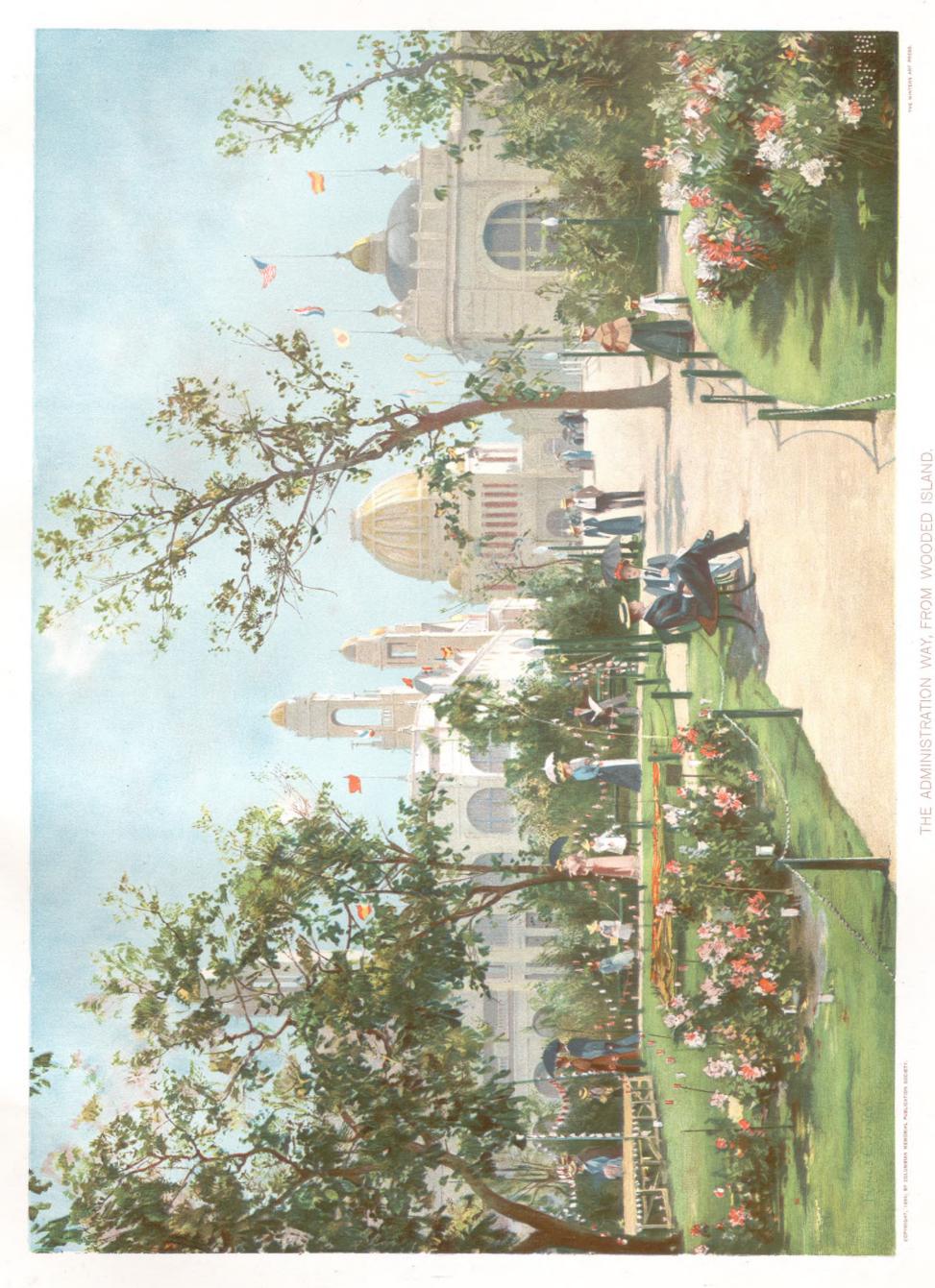
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WORLDS COLVMBIAN EXPOSITION

# THE BOOK OF THE BVILDERS

RY

DANIEL HVDSON BVRNHAM

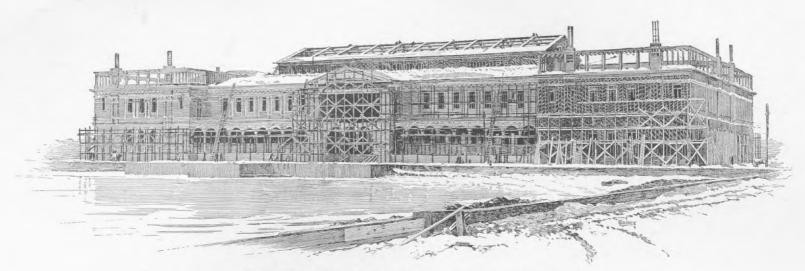
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FRANCIS DAVIS MILLET

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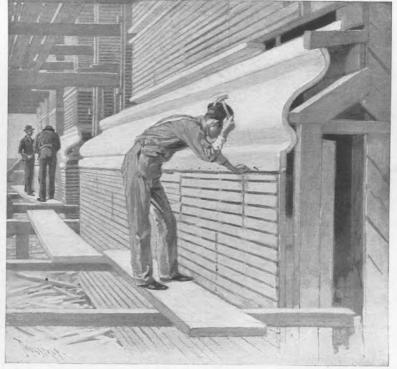


THE CONSTRUCTION OF WOMAN'S BUILDING, DECEMBER, 1891.

The original designs, as they came from the architects, consisted of beautifully drawn elevations, plans, and sections on a small scale, and these were sent to the Chief Draughtsman with instructions to prepare, with the greatest possible speed, drawings and specifications for the principal contracts. The time for this work was always limited, and frequently it was only by the exercise of continued effort at a high tension, carrying each day's work far into the night, that the plans were ready for estimates on the day advertised. great size of the buildings made it necessary to keep the scale of the contract drawings small, otherwise the sheets would have been too large for convenient handling. Scales of one-eighth, one-sixteenth, and one-thirty-secondth of an inch were used, according to the size of the building, and the details of design and construction were made on one-quarter and three-quarter inch scales. On these scales the plans of the different structures varied from three to four feet in width and from five to seven feet in length, each set making a bulky roll.

On receiving the original design the drawings were first examined to discover possible errors, and the Chief Engineer decided upon a general scheme of construction. The work was then put into the hands of a competent draughtsman and his assistants, and with the co-operation of the force of engineers, whose duty it was to calculate loads and strains, to give expert advice on various points of framing, and to make all diagrams of trusses,

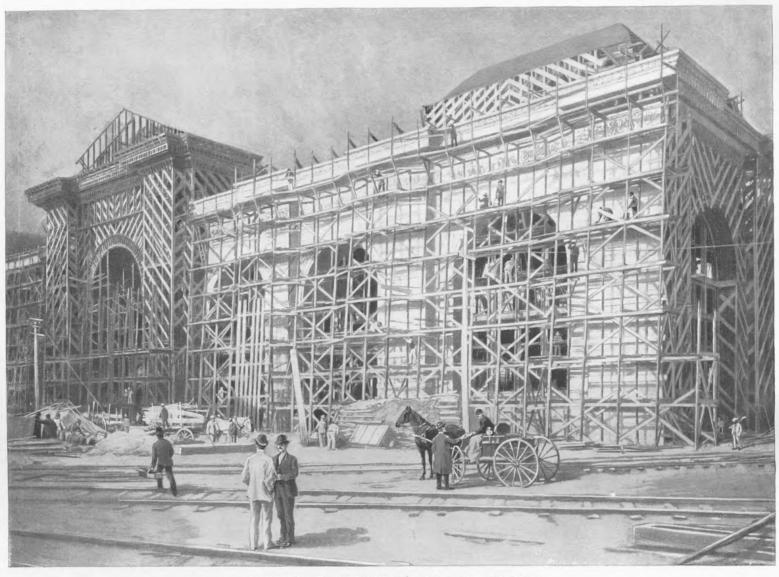
iron and steel construction, and special features, the drawings were completed and the specifications drawn up ready for the contractors. Thirty copies of the drawings and specifications were made for each building, thus enabling a number of contractors to estimate at the same time. The Assistant Chief of Construction made his own calculations of the cost of each building before receiving the proposals, and the bids were opened by him, publicly, on the advertised day. Each bid was accompanied by a certified check of sufficient amount to insure the reliability of the proposition, and the successful bidder forfeited his check if he failed to accept his contract. It was



THE APPLICATION OF STAFF.

seldom that one contractor took the entire construction of any building, but similar contracts on several different buildings were often let to the same bidder. This was particularly true of the exterior covering in staff work, and of the roofing and sky-lights, nearly all of which were done by three or four firms of contractors.

In anticipation of the confusion which would result from the extensive operations necessary to prepare building sites and to construct water-ways, roads, and terraces, the Department of Surveys and Grades divided the Park into squares of five hundred feet, and planted heavy posts, properly marked, at the corners of these squares. During the period of turmoil and upheaval, when the whole ground was a chaos of mud and sand, lumber piles, construction tracks, and temporary sheds, the surveyors were enabled by reference to these



STAFF AND SCAFFOLDING ON THE MINES BUILDING.

posts to carry on their work practically undisturbed by the apparent confusion and by the constant rapid changes in the aspect of each location. In order to facilitate grading operations complete stadia surveys were made at the start, showing the location of every tree, and recording the elevation of the ground at intervals of fifty feet. These elevations were taken from an arbitrary datum line, which was the level of low water of Lake Michigan in 1847, established by the trustees of the Illinois and Michigan Canal in that year, and adopted by the authorities of the city of Chicago as a basis for engineering calculations. The first survey showed that, of the four hundred and sixty-nine acres of unimproved land in Jackson Park, nineteen acres were water-ways, and the remainder varied from six inches to eleven feet above datum; three hundred acres averaging in height about three and a



A SPANDREL FROM THE MINES BUILDING.

half feet. In order to prepare this ground for the buildings it was necessary to fill up various low portions, so that the general level should be at least six and a half feet above datum.

The South Park Commissioners had granted the use of Jackson Park with several conditions, one of which was that the black earth should be removed before grading and afterward replaced over the filling, in order to preserve the ground for park purposes after the close of the Fair. This required the handling of 400,000 cubic yards of black earth twice, which, with the necessary filling for the sites, terraces, and roadways, brought the estimated expenditure up to more than half a million dollars.

The winter was a remarkably mild one. During February, the month in which the actual work on the grounds began, there were only five stormy days, and the temperature averaged forty degrees, never falling below

twelve degrees above zero. The general public interest in the work, stimulated as it was by the incipient labor troubles, made Jackson Park a popular place of public resort, and not less than twenty-five thousand people visited the grounds on several successive Sundays. Even on week-days the crowds of spectators often seriously interfered with the work of the surveyors. During the months of February and March the contractors were chiefly occupied in clearing away trees and removing black soil, and for this work about four hundred men and fifty teams were employed. The plans of the South Park Com-

missioners had contemplated an extensive system of water-ways in the unimproved portion of the Park, and some work had already been done upon them. A narrow channel had been excavated on both sides of the site of the Fisheries, and a lagoon had been dredged out in a southerly direction nearly to the north-east corner of the site of Electricity Building. This work was utilized



UNLOADING A CORINTHIAN CAPITAL.

as far as consistent with the plans of the Exposition. The portion of the channel north of the Fisheries was filled up, and the pond in the improved portion of the Park was connected with the north end of the lagoon. The dredging was continued southward from where it had been discontinued by the South Park Commissioners, the earth being removed by scrapers down to the water level and deposited where filling was required. The first dredge entered the lagoon early in April, and the work of raising the grade and preparing the sites proceeded with great activity. Hundreds of men shoveled the black earth into tramcars, which conveyed it to localities convenient for future use, and scores of scrapers changed the level of the ground wherever the sites of the buildings had been located. The white stakes of the surveyors alone indicated the presence of order and system in the chaos of preparation and gave a remote idea of the magnificent extent of some of the structures. Simultaneously with the leveling of the trees rose in the air the black frame-works and funnels of dredges, which left a trail of slimy mud and sand as they slowly ate their way into the earth along the line of the proposed canals and lagoons. The noxious black breath of these monsters poisoned the sweet lake air, and volumes of acrid smoke from burning brush-wood drifted away over the scattered houses inland, or melted into the dull cloud that hung over the city. The sound of axes, the shouts of mule-drivers, and the rumble of tram-cars were heard on every side. Among the trees of the wooded island the long white tents of the contractor's camp gleamed in the sun, a soft, white note in the duncolored landscape, and the pure blue line of the lake horizon made a cheerful contrast to the rugged and barren foreground.

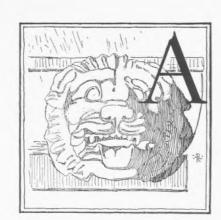


THE ELECTRICITY BUILDING, EARLY WINTER, 1891.



SEASONABLE WEATHER.

# CHAPTER III



CURIOUS epidemic of invention raged in all classes of society during the first few months, while the plans were in course of study and while the public mind was still unsettled as to the probable character the Exposition would assume. A full catalogue of the projects for towers, novel structures, and ingenious entertainments would more than fill this volume. The first of these schemes took a variety of forms, the most startling and original of which was a plan to construct a huge combination tower and

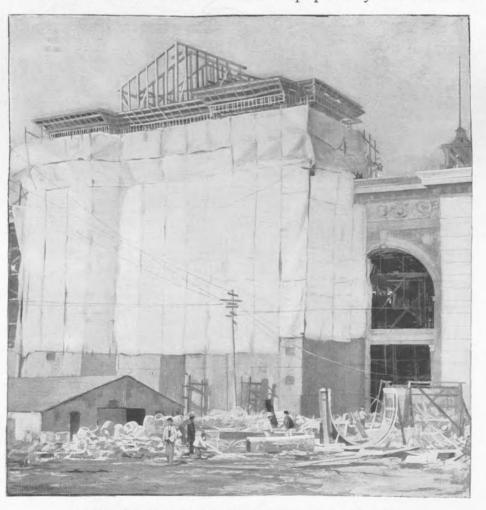
tent, consisting of a hollow shaft rising eleven hundred feet in the air from the center of a circle three thousand feet in diameter, bounded by a brick wall sixty feet high. Two galleries were to be suspended from the wall on the inside, the upper one to serve as a race-track and stock ring, the lower one to furnish space for the display of railway appliances and machinery of all kinds, while the general exhibits were to be shown in the immense area of one hundred and sixty-two acres inclosed by the wall. This space was to be covered by a glass roof, supported by two hundred and eighty thousand steel wires stretched from the summit of the tower to the top of the wall. The high tower in various shapes, from a simple shaft to a complex construction with spiral electric railway, continued to come into public notice until near the date of opening the Fair. Mr. Eiffel himself contributed a design for a tower which was not accepted, although he proposed to surpass the Paris structure in height and in beauty. The visitors to the Exposition, who observed a certain barren effect of composition at the extreme east end of the Midway, were probably not aware that this space had been reserved for a great tower, and that the foundation piles were covered up only at the last moment, the logs left above ground serving to construct the cabins of primitive style along the Midway.



A BAS-RELIEF FOR THE GOLDEN DOOR.

The design for a so-called Water Palace was one of the first presented for consideration, and attracted a great deal of attention for months. A location was assigned to it near where the Art Building was placed later, and the scheme received earnest support from several of the Directors until it was demonstrated at last to be impracticable. The proposition contemplated building a circular hall, surmounted by a dome of glass and steel two hundred and fifty feet high. Three caravels, exact reproductions of the vessels of Columbus in dimensions and build, were to be mounted on this dome, and a great volume of water was to be pumped up so as to flow in a solid sheet around the caravels and over the whole exterior surface of the dome. The water was to fall into a moat built on the top of the wall at the base of the dome, and in this was to float an historical exhibit of naval architecture. It was estimated that four or five hundred people would be able to enjoy the view from the decks of the caravels. Electrical illumination was provided for in the plans, and a tempting program of light and water effects was arranged.

Second to the Water Palace in popularity was the scheme to build a colossal kneeling figure



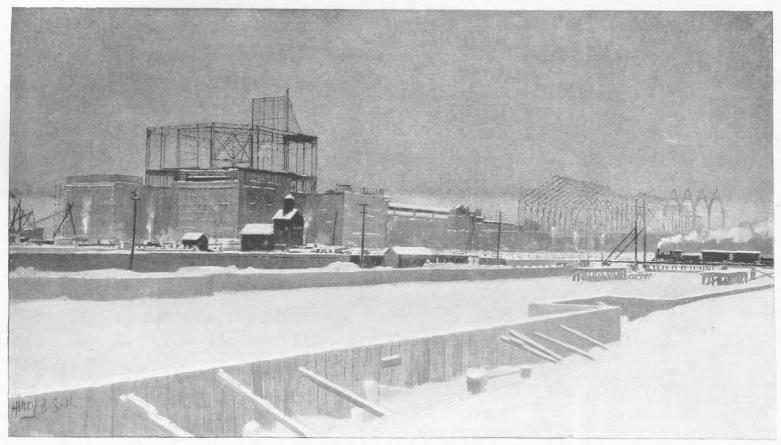
CANVAS SCREEN FOR WORKMEN ON THE MINES BUILDING.

bearing a globe, the whole to be four hundred and fifty feet high. The pedestal of the statue was to contain an auditorium of a seating capacity of ten or fifteen thousand people, and a stage with the continuous representation of the voyage of Columbus with real vessels and real water. The globe was to have the continents marked by areas of metal, and the oceans by areas of glass, and the interior was to be lighted at night by incandescent bulbs arranged to imitate the constellations as they appeared on the night Columbus discovered land.

The project for an underground palace originated, of course, in the desire to exhibit in the most

perfect manner the great mining industries of the country. It was proposed at one time to sink a shaft one thousand feet deep and excavate a large room for the exhibition of minerals, with side drifts or passages to illustrate the actual working of different kinds of mines and to show the ores as they exist in the natural state. This scheme dwindled by gradual stages down to the plan of sinking a shaft under the Mines Building; but this was finally abandoned.

Scores of equally interesting propositions, and others of purely visionary nature, were presented to the Directors, and were often argued with zeal, not to say with aggravating persistence. But the grand and beautiful picture suggested by the architects' designs made such a vivid impression on the minds of those who had the good fortune to be present when the sketches were shown, that the high standard, then recognized and accepted, pre-

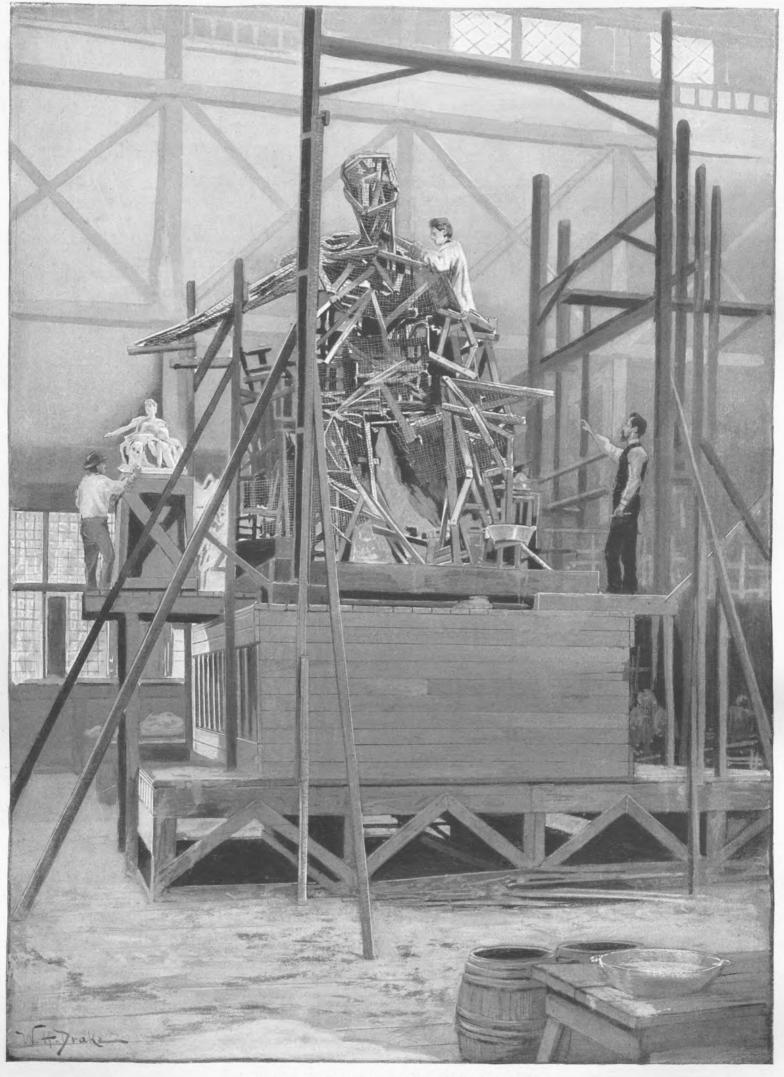


THE SOUTH CANAL IN WINTER.

vailed throughout the whole period of design and early construction, and was only set aside for cogent reasons of absolute necessity.

The Landscape Department had been actively at work since the middle of February. Two large nurseries were started, one on the ridge, which afterward became the Wooded Island, and one on the long narrow tract called the Midway Plaisance, a name originally given to it by Mr. Olmsted as appropriately designating this feature of the general plan of the city park system as it was laid out by him. The first of these nurseries was intended to receive and prepare for planting in the succeeding autumn and spring all the hardy trees, plants, and shrubs ordered from different parts of the country. The second was established for the purpose of growing and cultivating more tender plants and cuttings, and seven large greenhouses and one hundred cold frames were built to carry on this work. Over seventy thousand willow cuttings were taken from the large trees on the Midway; other varieties were purchased in great numbers or contributed by the authorities of the public parks. These extensive preparations were made in order to carry out to the fullest extent the system of planting



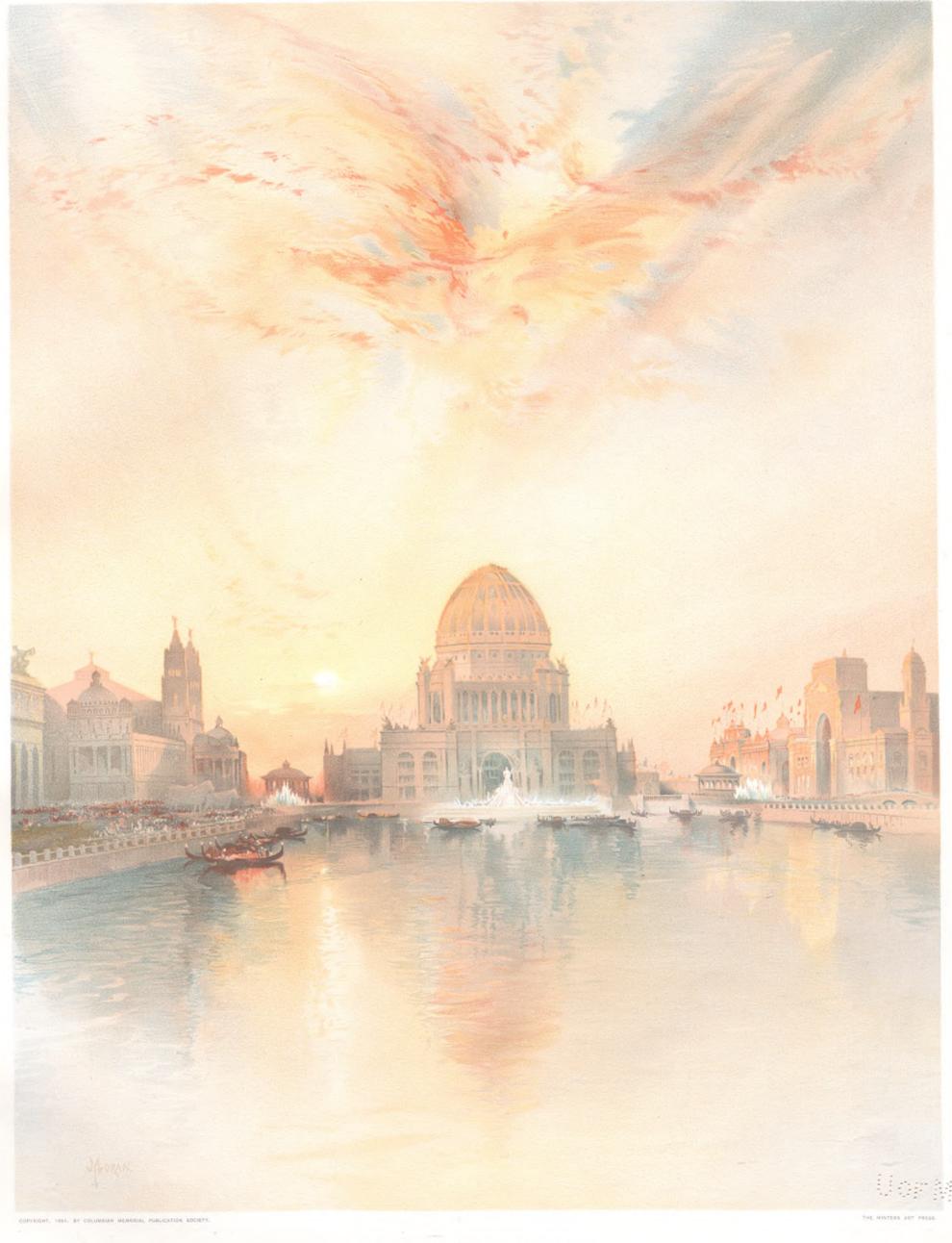


THE SKELETON OF A GROUP OF SCULPTURE.

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THE GRAND COURT AT SUNSET.

FROM THE PAINTING BY T. MORAN.

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# THE COLUMBIAN SERIAL

June 16, 1894.

PUBLISHED BI-WEEKLY

AUG 1 1908

SUBSCRIPTION, \$25.00 A YEAR.

WORLDS COLVMBIAN EXPOSITION

# THE BOOK OF THE BVILDERS

DANIEL HVDSON BVRNHAM

FRANCIS DAVIS MILLET

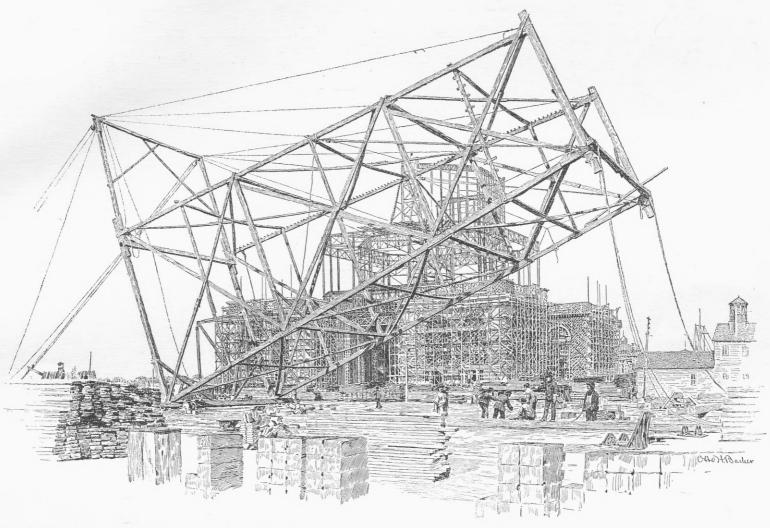
THE COLUMBIAN MEMORIAL PUBLICATION SOCIETY, PUBLISHERS, SPRINGFIELD, OHIO.

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shrubs, ordered from different parts of the country. The second was established for the purpose of growing and cultivating the more tender plants and cuttings, and seven large green-houses and one hundred cold-frames were built to carry on this work. Over seventy thousand willow cuttings were taken from the large trees on the Midway; other varieties were purchased in great numbers or contributed by the authorities of the public parks. These extensive preparations were made in order to carry out, to the fullest extent, the system of planting proposed by Mr. Olmsted in his description of the design of the lagoons and the Wooded Island, which is properly quoted here:

"As far as it is possible the lagoon must be made to look like a natural bayou, secluded, shallow, and placid, but not suggestive of stagnancy or any form of foulness or unhealthfulness.



RAISING A TRAVELER FOR THE MACHINERY BUILDING.

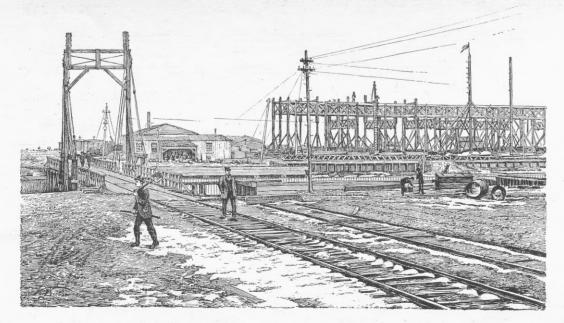
Its low, sterile shores must be given a rich affluence and picturesque effect, in striking contrast alike with the present ground, the shore of the lake, the margins of the basin in the Grand Court, and the canals yet to be formed. The desired result in this respect is to be accomplished largely by a thick, luxuriant growth of herbaceous aquatic vegetation along the shores, rooted partially above and partially below the surface of the water. The best of the few trees now growing upon the island are to be retained, and, if possible, forced by an enrichment of the soil into finer foliage. Between them and the water plants bushes and young trees are to be introduced to make the island appear a broad and continuous bank of verdure. Nearly everywhere else, except where formal terraces are to be formed near the shore, three main objects are to be had in view in the shore planting: First, to make an agreeable foreground, over which the great buildings of the Exposition will rise, gaining in grandeur of effect upon the imagination, because appearing at a great distance



A TIME-KEEPER.

and more lofty than they would be but for such a fore-Second, to establish a considerable extent of broad and apparently natural scenery, in contemplation of which a degree of quieting influence will be had counteractive to the effect of the artificial grandeur, and the crowds, pomp, splendor, and bustle of the rest of the Exposition. Third, without losing a general unity and continuity of character in the shores, to secure, with all possible exercise of skill for the purpose, whatever time will allow of mysterious poetic effect, through the mingling intricately together of many forms of foliage, the alternation and complicated crossing of salient leaves and stalks of varying green tints in high lights, with other leaves and stalks behind and under them, and, therefore, less defined and more shaded, yet partially illumined by light reflected from the water.

"So far as consistent with this last purpose of obscure and subdued poetic beauty, through the intricate conjunction of various forms of vegetation and complex dispositions of light and shade, it is intended that the shores should have a somewhat gay and festive aspect through a profusion of flowers; but it is not desired that there should anywhere appear to be a display of flowers demanding attention as such. Rather, the flowers to be used for the purpose should have the effect of flecks and glimmers of bright color, imperfectly breaking through the general greenery. It will be easier to accomplish what is thus to be aimed at even if flowers are used profusely, because, to the great body of visitors, the lagoon plantations will only be seen from a distance, and from a nearly horizontal point of view on the shore opposite that on which they stand. Boats will be prevented from closely approaching the plantations. While the greater number of plants to be used will be such as are indigenous to the river banks and swamps of northern Illinois, and therefore hardy, many others are to be scattered among them to increase the intricacy and richness of general effect. The work is thus to be, in some de-

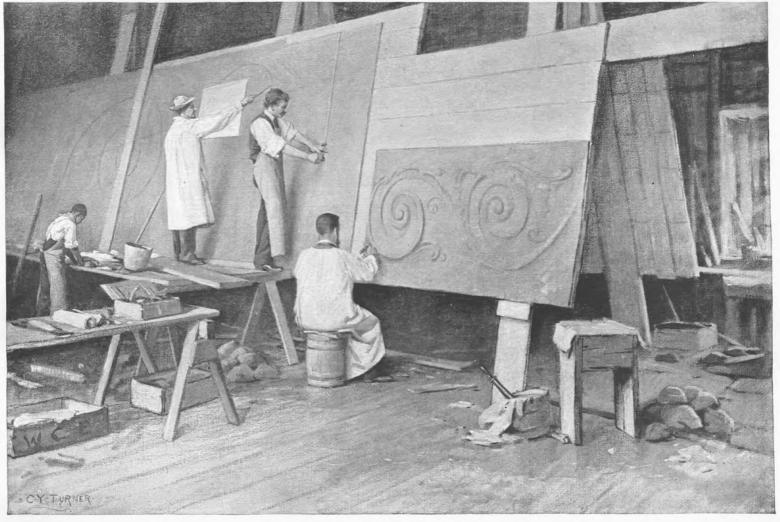


AN EARLY VIEW OF THE AGRICULTURAL BUILDING.

gree, of the character of a theatrical scene, to occupy the Exposition stage for a single summer."

There were several obstacles to the full realization of this design, but most of them were overcome by diligent toil and constant attention. The chief difficulty was the treatment of the irregular shore lines in such a way that they would not look ragged and

unkempt at any stage of the water. The fluctuations of the water-level were very rapid, the lagoons often rising or falling eighteen inches in as many minutes, and a liberal quantity of aquatic and semi-aquatic bushes and plants, all of them of rapid growth, were secured in readiness for planting. As soon as the outlines of the islands and adjacent shores were formed by the dredges they were strengthened by a line of stakes driven at close intervals, to prevent, as far as possible, the undermining of the banks by the current and the waves, and cuttings were planted in great profusion. During the summer and autumn twenty-seven car-loads of semi-aquatic plants from Lake Calumet were set out around the lagoons, and over four thousand small crates filled with pond-lily roots were sunk in the water along the shores. The operations of dredging and the unruly water-level caused constant damage to this planting, but it developed an astonishing growth in the first season.



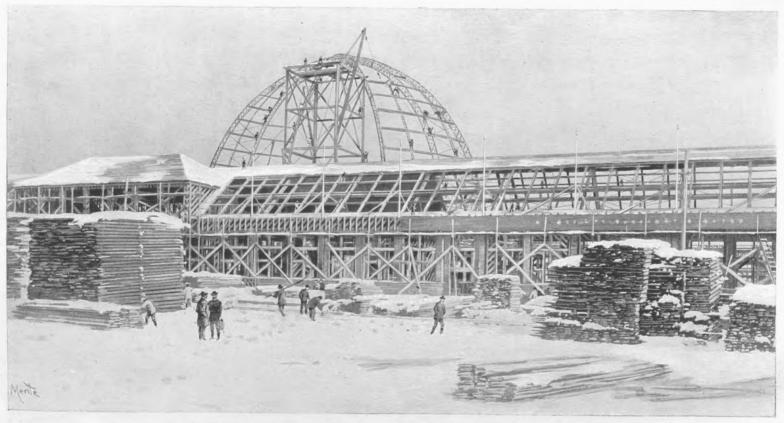
MODELING THE FIRST STAFF ORNAMENTS.

The banks of the islands were graded as fast as practicable, and a well-studied system of planting was carried on for a certain distance inland. The full completion of the plan was made impossible by the assignment of the interior of the island to the Department of Horticulture for the exhibition of roses and other flowers, and the perfect harmony contemplated by the landscape architects was thereby destroyed.

By the end of May all the black soil had been removed from the unimproved portion of the Park, and had been collected in heaps for the use of the Landscape Department, or spread over areas where it would remain undisturbed. This alluvial soil proved indispensable. It consisted chiefly of vegetable matter, and when freely mixed with sand could be easily and quickly handled, producing, with proper cultivation, the highest standard of vegetation.

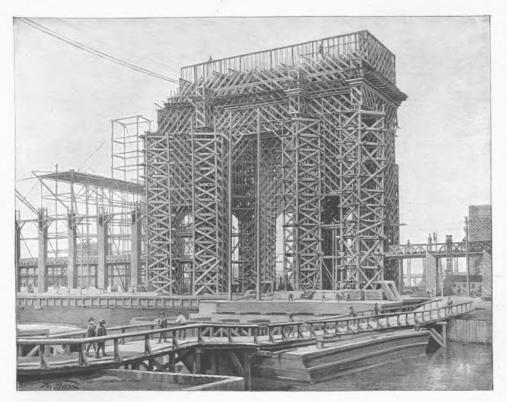
The first construction tracks were laid during this month, and in a few weeks the

Park was effectually covered with temporary railways for the convenient and rapid delivery of material at any point. Over thirteen miles of track were in use at one time. The water was two feet lower than the average recorded for thirty years previous, and the uncertainty as to its height during the Exposition period gave rise to many perplexing questions as to the depths of the channels, the elevation of the landings, and the finish of the docking. The contractors were not slow to take advantage of the fine weather and low water, and carried on their work with constantly increasing activity. The first dredge entered the lagoon early in April, and began to work its way south along the line of the proposed new waterway, which was first excavated to the water-level by scrapers. The material thus removed was deposited by carts or tram-cars at the places where filling was required. Several other dredges soon began to work at different points, and in less than two months, or before the first of June, the Wooded Island and Hunter's Island began to take intelligible form,



CONSTRUCTION OF THE HORTICULTURAL BUILDING, JANUARY 14, 1892.

the North Canal was excavated, and the Basin nearly completed. The site of the Administration Building was filled to the height of thirteen feet, and was aptly christened by the workmen "Administration Hill," on account of its prominent elevation in comparison with the general level. The terraces around the other sites rose in long ridges like the lines of military earth-works, and defined with considerable accuracy the general outlines of the plan, giving a fair idea of the huge area to be covered by the Manufactures Building and a suggestion of the grand expanse of the Basin and of the extent of the vistas at different points. Like a huge ant-hill the Park swarmed with energetic workers changing the aspect of the grounds with every hour, moving over ten thousand cubic yards of earth a day, rapidly transforming the waste of marsh and sand-dunes into a great arena for the contest of nations in the arts of peace. Thus the summer of 1891 opened full of promise, with every favorable prospect and with a record of unparalleled progress in the preliminary work of building an exposition.



THE WEST PORTAL OF THE MANUFACTURES BUILDING.

The second annual meeting of the stockholders was held in April, 1891, and several changes were made in the Board of Directors, although the majority of the members continued to serve. Mr. Gage, having declared his inability to fill the office of President for another term, was succeeded by Mr. William T. A temporary building for the use of the Construction Department was erected in less than sixty days from the date the ground was broken, and was occupied toward the end of the month.

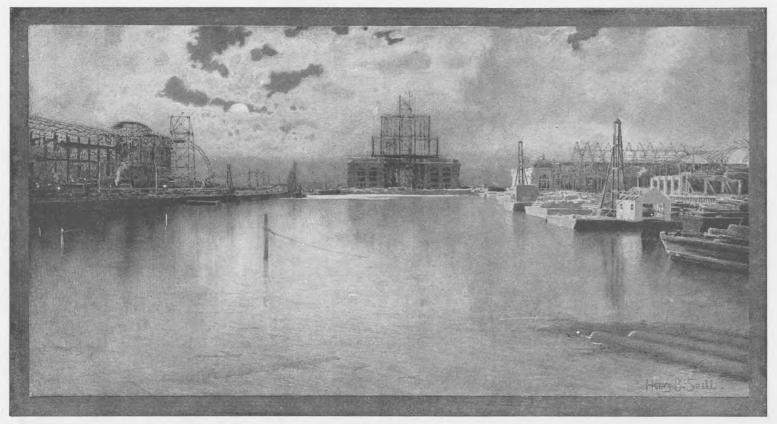
The question of foundations now became important, for it was necessary to determine that item in the specifications for construction. Over two hundred borings were made on the sites of the different buildings, and the average character of the earth was found to be one foot of black soil, two feet of sand, eleven feet of sand saturated with water so that it became almost like quicksand and was often given this name, fifteen feet of clay, and then hard pan. Loading tests were next made to determine how much weight per square foot the earth would sustain without displacement, as most of the buildings were planned to stand close to the lagoons and canals. This test varied according to the locality where it was applied, but was usually made in the following manner. A plank platform four feet square was placed on the ground, which had been undisturbed except for the slight leveling necessary for the experiment. On this platform was placed a load of one ton per square foot, and this weight

was left to stand for fortyeight hours or more. settlement under this test was found to be from oneeighth of an inch to one inch and a quarter. Further tests with greater weights were tried at many points, and from the combined results it was decided to use spread foundations everywhere except under a portion of the south half of the Manufactures and Liberal Arts Buildings and the south-west corner of the



VISIT OF MEMBERS OF CONGRESS, FEBRUARY 23, 1892.

Agricultural Building, along the line of an old swale of irregular crescent shape which was discovered by the tests. The first of these two buildings was originally designed with a great central dome and two open court-yards. Later, when it was decided to suppress the dome and cover the whole inclosure with a roof, it was thought advisable to use pile foundations for the great steel trusses. In the case of the Art Building, the walls of which were of brick, concrete foundations were used. The Peristyle was built partly on rows of piling driven for the purpose and partly on the pier first constructed at that locality. With the above-mentioned exceptions all the buildings were erected on spread foundations, or mud-sills, which were made of a simple crib-work of timber resting on plank. These proved perfectly satisfactory in every case, and a great economy was effected by their use. The contractors were not required to place these cribs below the frost line, but simply to remove whatever black soil or filling there might be, and make a level bed for them on the sand. The maxi-



THE GRAND COURT ON A MID-WINTER NIGHT.

mum load placed on the spread foundations was two thousand five hundred pounds per square foot, and this figure included the live and dead loads together with the vertical component of the wind pressure. When piles were used the maximum load estimated for each pile was fifteen tons.

It was understood that the architects who designed the buildings should not be held responsible for the construction plans, and one of the duties of the Chief Engineer of the Construction Department was to calculate the loads each structure would have to carry, and the strains to which the material would be subjected. The floors were figured to bear loads according to the nature of the exhibits to be placed on them. Thus the floors of the Machinery Building were planned to sustain a weight of two hundred and fifty pounds per square foot, the Transportation Building and the Mines Building one hundred and fifty pounds per square foot, and the remaining seven out of the ten principal structures one hundred pounds per square foot. These were general floor loads only. Where heavier exhibits were to be placed it was proposed to re-enforce the supports and floors as required,



THE NORTH GALLERY OF THE AGRICULTURAL BUILDING.

when the character and the location of these exhibits were decided upon. The galleries in all the buildings were figured for eighty pounds, the roofs for forty pounds horizontal or twenty-five pounds vertical load, and for twenty to thirty pounds wind pressure, according to the exposure of the building.

These statistics have value in this chronicle not only as a record of actual construction, but as an indication of the character of the work undertaken by the Construction Department, and of the care taken from the beginning to insure the safety of the structures under any probable

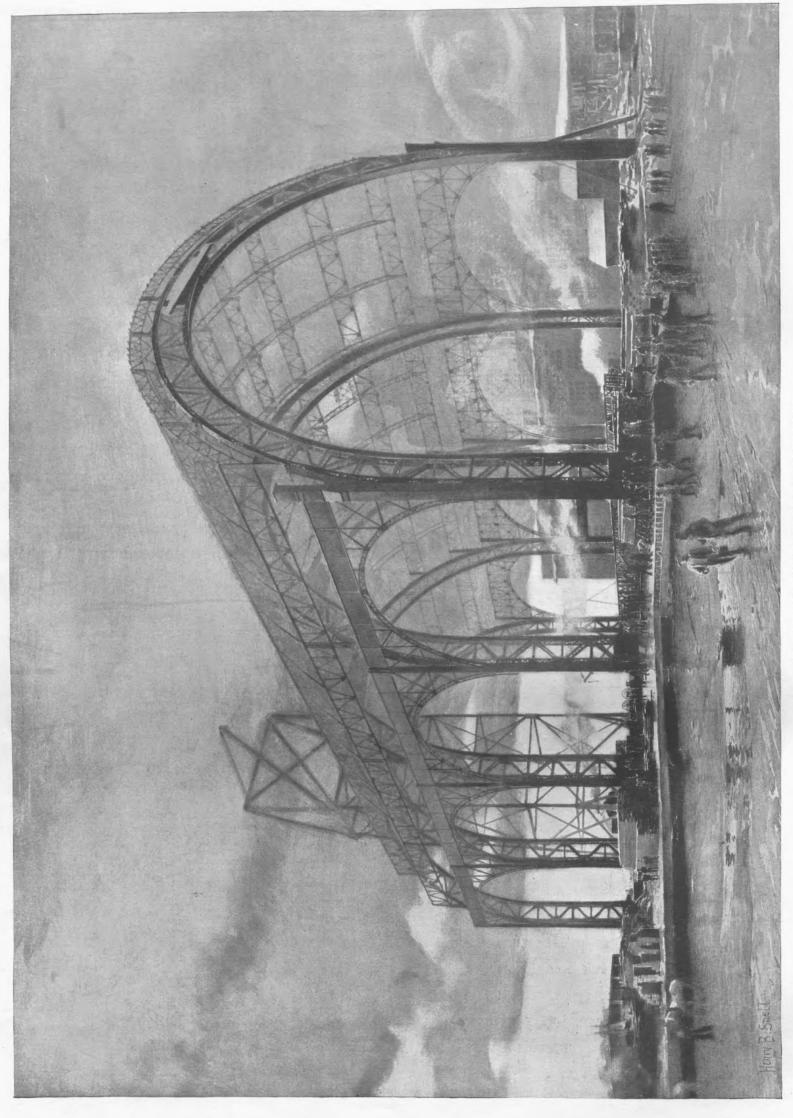
conditions of occupation. The abundance of fine timber at a low price made it possible to erect the buildings with a comparatively small proportion of steel or iron, and the modern methods of wood construction offered not only the advantage of economy and rapid work, but also made it possible to plan the framing so as to utilize the standard lengths of timber in such a way that a notable salvage on this class of material could be depended upon when the buildings should be torn down.

It had been found early in the study of the general design that it would be absolutely out of the question to carry the construction of the immense buildings to such a point that

the interiors would harmonize with the façades either in style or finish. Exceptions were necessarily made in the case of the Administration Building, the Art Building, the Woman's Building, the Terminal Station, and the Peristyle, but it was decided to treat the others as great shelters for the housing of exhibits, and they were accordingly planned to satisfy the conditions of economy, of protection from the weather, and of convenience of installation, with only such elements of architectural design as were compatible with these conditions. The buildings would therefore be little more than great architectural sketches, carried out with sufficient elaboration and finish to give an effect of solidity and magnificence, but yet perfectly adapted to the temporary service for which they were intended. Thus the great purpose of the designers of the Exposition, modified as it was by the necessities of



MODELING A SPANDREL FOR THE MINES BUILDING.



THE TRUSSES OF THE MACHINERY BUILDING. THE CLOSING HOUR ON A WINTER DAY.

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SETTING A STATUE ON AGRICULTURAL BUILDING.

The Book of the Builders.

FROM THE PAINTING BY W. T. SMEDLEY. Supplement to the Columbian Serial, Vol. 1, No. 6, June 16, 1894.



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DECORATION IN THE N. E. PAVILION OF THE MANUFACTURES BUILDING. PAINTING BY LAWRENCE C, EARLE,

The Book of the Builders,

THE Columbian Memorial Publication Society was incorporated under the laws of the State of Illinois for the purpose of "the publication and preservation of such material of an artistic and instructive nature as will best perpetuate the World's Columbian Exposition as an art educator."

## THE COLUMBIAN SERIAL

A BI-WEEKLY ILLUSTRATED PERIODICAL,

relating to the Exposition of 1893, will be regularly issued by the Society. The first subject treated will be the Organization, Design and Construction of the Fair, under the title of

# THE BOOK OF THE BVILDERS

BY

#### DANIEL H. BURNHAM

Chief of Construction and Director of Works, World's Columbian Exposition

AND

#### FRANK D. MILLET

Director of Decoration, World's Columbian Exposition.

Announcement of other subjects will be made in due time.

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