A GLIMPSE OF THE NEW BUILDINGS FROM THE ESPLANADE

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STATUS OF THE NEW BUILDINGS

A little insight into the unusual facilities of the New Laboratories—Laboratory work on a commercial scale a feature

Since the last article relating to the buildings in Cambridge, marked progress has been made and the buildings are rapidly assuming a more completed and finished appearance. Within a few days the main group will have reached a stage where outward signs of construction will have been removed.

The completion of the dome of the Library Building and the removal of the staging and towers used in its construction has brought about a distinct change in the aspect of the entire group. From the Boston side of the Charles River this dome of limestone, flanked on either side by great pilastered wings, is a most imposing feature. Viewed from a high vantage point such as the Custom House Tower the new buildings are the dominating feature of the Cambridge district, and even from certain points of the Harvard Stadium the dome shows clear and sharp above the surrounding structures. This dome is constructed of reinforced concrete faced with limestone and rises to an elevation of approximately 150 feet above the general street level, or practically the height of a twelve-story office building.

Back of the main group and beyond the tracks at the rear of the Institute property, the Power House, which will supply steam heat and electricity for the whole development, is rapidly nearing completion and will supply what heat is needed during the coming winter for construction purposes. The stack is one of the largest and highest in Cambridge, rising 180 feet above its base and having a maximum diameter of 18 feet.

The various units comprising this group have been so well proportioned by the architect that it is difficult to get a proper conception of the area and size of the group from figures or plans; and

even now, when the work of construction is rapidly nearing completion, few people realize its magnitude and extent.

The over-all dimensions of the group are 800 feet from east to west and 700 feet from north to south, so that the area covered and enclosed by the group is approximately thirteen acres. This ground area would easily contain two Harvard stadiums side by side with sufficient space left over for the new Boston Dry Dock.

The possibility of changing the purposes for which the various buildings may be used as the Institute expands and different departments develop in the future made it advisable to keep the frame as nearly the same throughout as possible, avoiding special construction where such work was not absolutely necessary. This feature of the design will be appreciated when the future growth of the Institute requires more space and perhaps the removal of older departments to other sections of the building.

The design of the buildings calls for two general types of column spacing; one having two rows of interior columns, with corridor between leaving room for offices, class room or small lecture rooms on both sides; the other having a single row of interior columns, leaving room for corridors or offices and small class rooms on one side and space for lecture rooms or laboratories on the other or wide laboratories on both sides. With either type of frame it will be possible to throw the full width of the building into one large room for drafting or laboratory purposes.

The completed buildings will contain some 600 rooms ranging in size from small offices approximately 13 feet by 15 feet in dimension to the large main lecture room in the Library Building which will accommodate 500 students at one time.

As the visitor or student approaches the new Institute from the Charles River Esplanade entrance he will find the department of civil engineering in the two buildings forming the Esplanade and Massachusetts avenue sides of the minor court on his left. The department of general studies he will find in the corresponding buildings on the opposite side of the main court. The departments of mechanical engineering, hydraulic engineering, applied sciences and naval architecture will be provided for in the buildings forming the north side of the minor court and the adjoining building forming the Massachusetts avenue side of the main court. The departments of chemistry and geology have been assigned space in the corresponding buildings on the opposite side of

VIEW FROM THE ESPLANADE LOOKING WEST INTO THE GREAT COURT

VIEW FROM CORNER OF MASSACHUSETTS AVE. AND THE ESPLANADE

the main court and the department of physics has been given space in one of the two small buildings flanking the Library Building on the right and forming part of the base of the large U. The department of electrical engineering has been provided for in the central building, called the Library Building owing to the fact that the library is to be located on the top floor, and will overrun into the unit forming the east side of the base of the main court. Biology will also be taken care of in the central unit, and the administrative offices of the Institute, including the offices of the President and the bursar will be located in the building flanking the Library Building on the Massachusetts avenue side and facing the main court. The department of mining will be provided for in two buildings to be constructed adjoining the northeast corner of the group.

The athletic field and grandstand are located in the northeast corner of the property considerably to the rear of the locations selected for the dormitories.

Ample facilities have been made throughout for drafting rooms, these being located mostly on the top floors of the buildings forming the sides of the minor courts although large drafting rooms have been provided in other buildings where necessary.

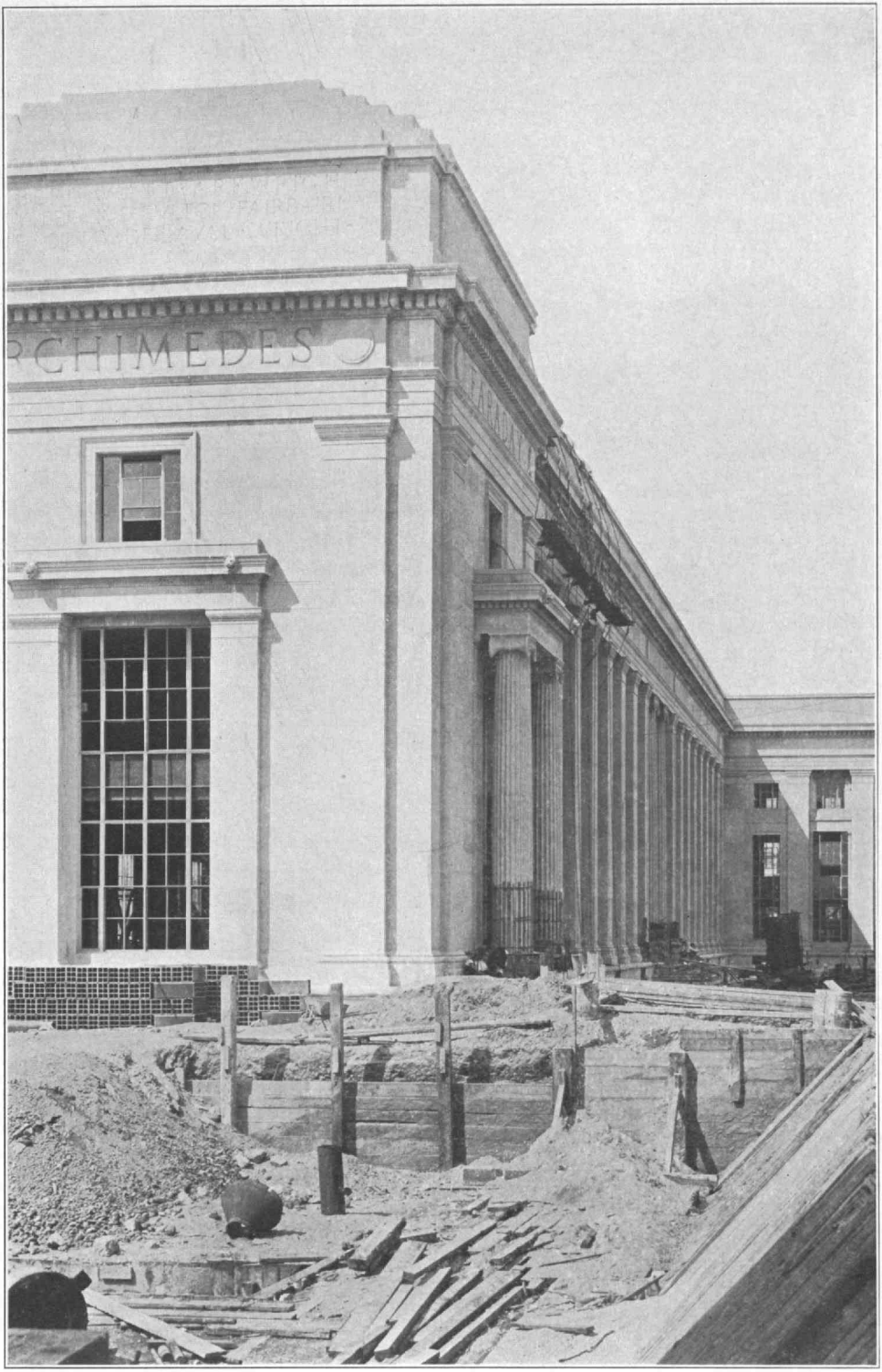
One of the most interesting features of the new buildings will be the Hydraulic Laboratory, located in the building forming the Massachusetts avenue side of the main court. The design of this laboratory has received a great deal of study from the Faculty and many prominent hydraulic engineers and it is believed that it will be superior in arrangement and equipment to that of any other educational institution in the country. A large concrete pipe intake has been constructed to take water from the Charles River basin to the Power House, and the laboratory will be supplied from this line. From the intake the water will flow into large circulating canals in the basement of the building from which point it is pumped through a Venturi tube into an open steel flume located on the second floor. From this flume it will flow through a steel penstock provided with openings for water wheels. A concrete draft tube will be constructed, connected with the lower end of the penstock, and from this draft tube the water will be discharged through sluice gates or over weirs back into the circulating canal. The capacity of this hydraulic system, including the circulating canals and the adjoining steam laboratory, is

250,000 gallons and it is constructed throughout with a view to enabling precise experiments in flowage and hydraulic work. This laboratory is also equipped with a well, located in the basement and extending to a depth of 21 feet below the basin level that will provide for graduated suction heads for pumps. All of the common means for measuring flow rates and quantities are provided, including Venturi meters, submerged orifices, calibrated and weighing tanks. Pressure pumps and tanks provide air and water pressure for the operation of Pelton wheels and simulating high head conditions. The laboratory contains provisions for the development of the power from 22,000 gallons of water per minute, operating at a natural head of 25 feet, and an artificial head of 575 feet can be obtained. Ample size of water ways makes possible the solution of commercial problems under laboratory conditions.

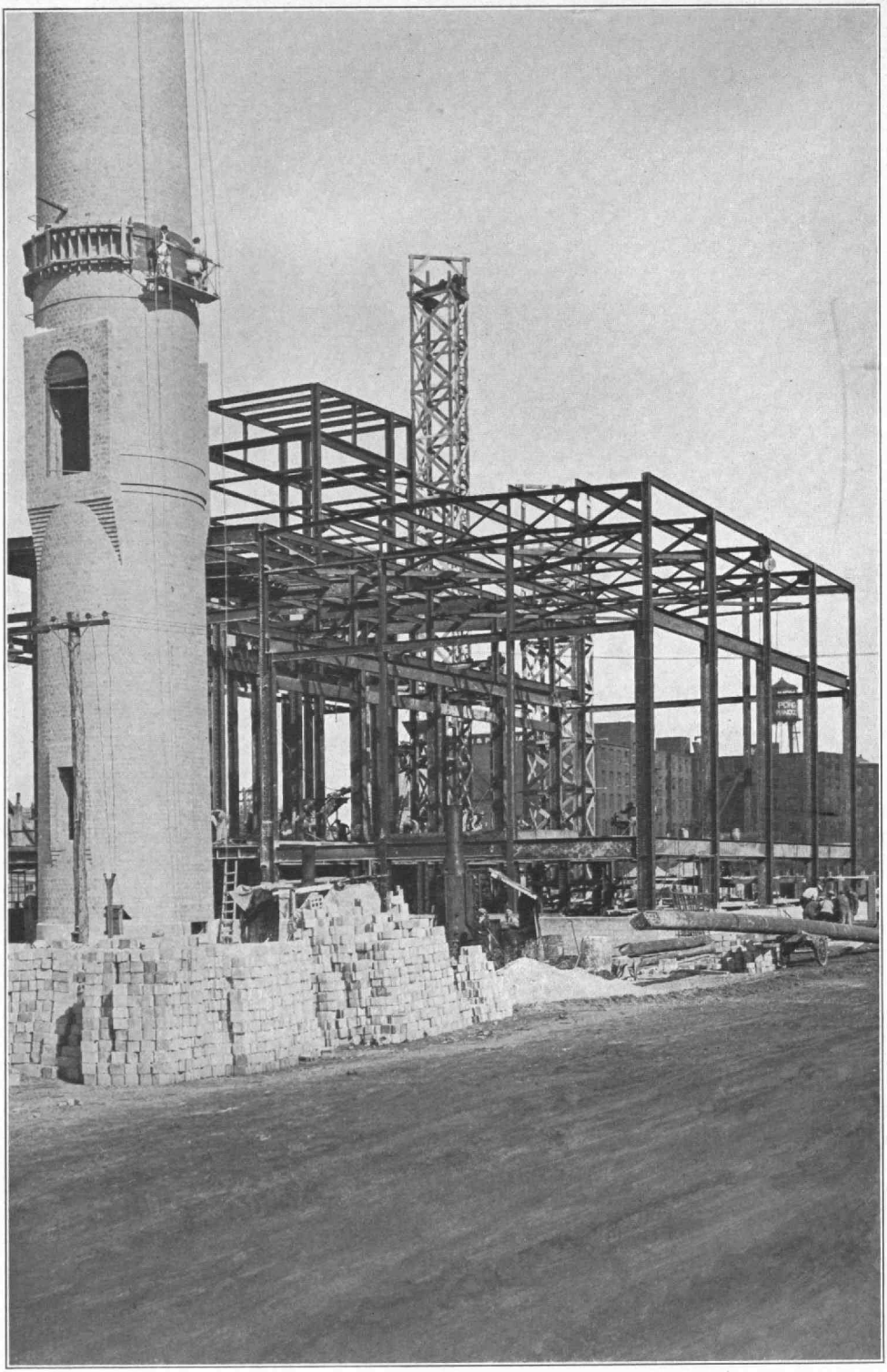
The Steam Laboratory, adjoining the Hydraulic Laboratory, has many features in common with it, such as facilities for pump testing, circulation of condensing water, and the service of a traveling three-motor crane of ten-ton capacity. The old engines from Trinity place will be aligned under this crane in a systematic manner for accomplishing a wide range of experiments. These old engines will be reinforced by a modern 30-horsepower Corliss engine. The settings of these engines are so constructed that they can be superseded temporarily or permanently by other types. The power developed in this laboratory will be absorbed by generators, dynometer brakes or water rheostats, and the exhaust steam when not condensed will be returned to the heating system.

The Mechanical Laboratory will be completely equipped with modern devices, including equipment for autogenous welding, babbiting and solder work, chipping, filing and heat treatment. This laboratory will include a complete installation of compressed air and with the numerous electrical outlets will permit of many refinements and efficiencies in the course of instruction.

Among the new equipment that will be provided for the department of applied mechanics will be a 300,000 pound vertical Universal type testing machine, three 60,000 pound vertical Olsen testing machines, and modern equipment for efficient research and heat treatment. The laboratories for work in cement, concrete and road materials will be much in advance of those in the old Institute.



WHERE THE DEPARTMENT OF MECHANICAL ENGINEERING WILL BE HOUSED



POWER HOUSE GOING UP ON VASSAR ST.

Laboratories for the departments of chemistry and physics will be located in the eastern half of the group and will occupy rooms extending either one half or the full width of the building. The outside walls of these laboratories will be given over to benches, shelves and radiators while partition space will be devoted to special apparatus and ventilating ducts. Special attention has been given to the ventilation of these laboratories, and the different kinds of gases from furnaces, etc., will be removed separately by fans located on the roof. All experiments which generate gases will be performed under down-draft hoods on the table tops, or enclosed exhausting hoods on the walls. These laboratories are fitted for work on a commercial scale and large modern apparatus is to be provided for advanced work on food, sugar, fuel, oil and gas and for qualitative and quantitative analyses. Laboratories are also provided for inorganic chemistry and geology, and electro-chemistry. The laboratories for optics, photography and photometry are also very complete and are located so as to permit of the following of the sun with heliostat for experiments with its rays. Space is provided for undergraduate instruction in the common branches of physics, mechanics, optics and heat.

The new laboratories for the electrical engineering department lose many of their familiar characteristics by the removal from the single story Lowell Building. The new laboratories will be quite distinct from the generating plant but will have improved facilities for departmental educational purposes. This department will contain a very complete local plant for the regeneration and transformation of current to be used for experimental purposes, and the design of the electrical distribution system is such that practically any known type of electrical machine or other device may be set upon the laboratory floors and tested or investigated with the current available. A new feature of this department will be the heavy current and machinery laboratory where direct current up to 6,000 ampères will be available with other facilities for the testing and investigation of all types of special machines. The laboratories are so arranged that ready access may be obtained to the large lecture room, and a special track has been provided in the floors for the wheeling, on specially constructed tables, of such heavy apparatus as it is necessary to have for practical demonstration. A small departmental lecture