

In the next number of this JOURNAL I propose to give a strict mathematical demonstration that the above laws and formulæ hold true for all continuous girders of the class considered, and by which anyone may test the accuracy of the tables here presented. I shall also investigate and present simple formulæ and tables for the case where the two end spans are different in length from the other spans, the ends being either free upon abutments or firmly fastened, so that the tangent at that point is always horizontal.

THE NEW PAVILION WARD OF THE PRESBYTERIAN HOSPITAL OF PHILADELPHIA.

BY JOSEPH M. WILSON, C. E., Engineer and Architect.

The Presbyterian Hospital of Philadelphia has now nearly completed a new Surgical Pavilion Ward on its grounds at Thirty-ninth Street and Powelton Avenue, and as the plan and arrangement are a considerable departure from the old established and time-honored principles of hospital construction, a short description may be of interest.

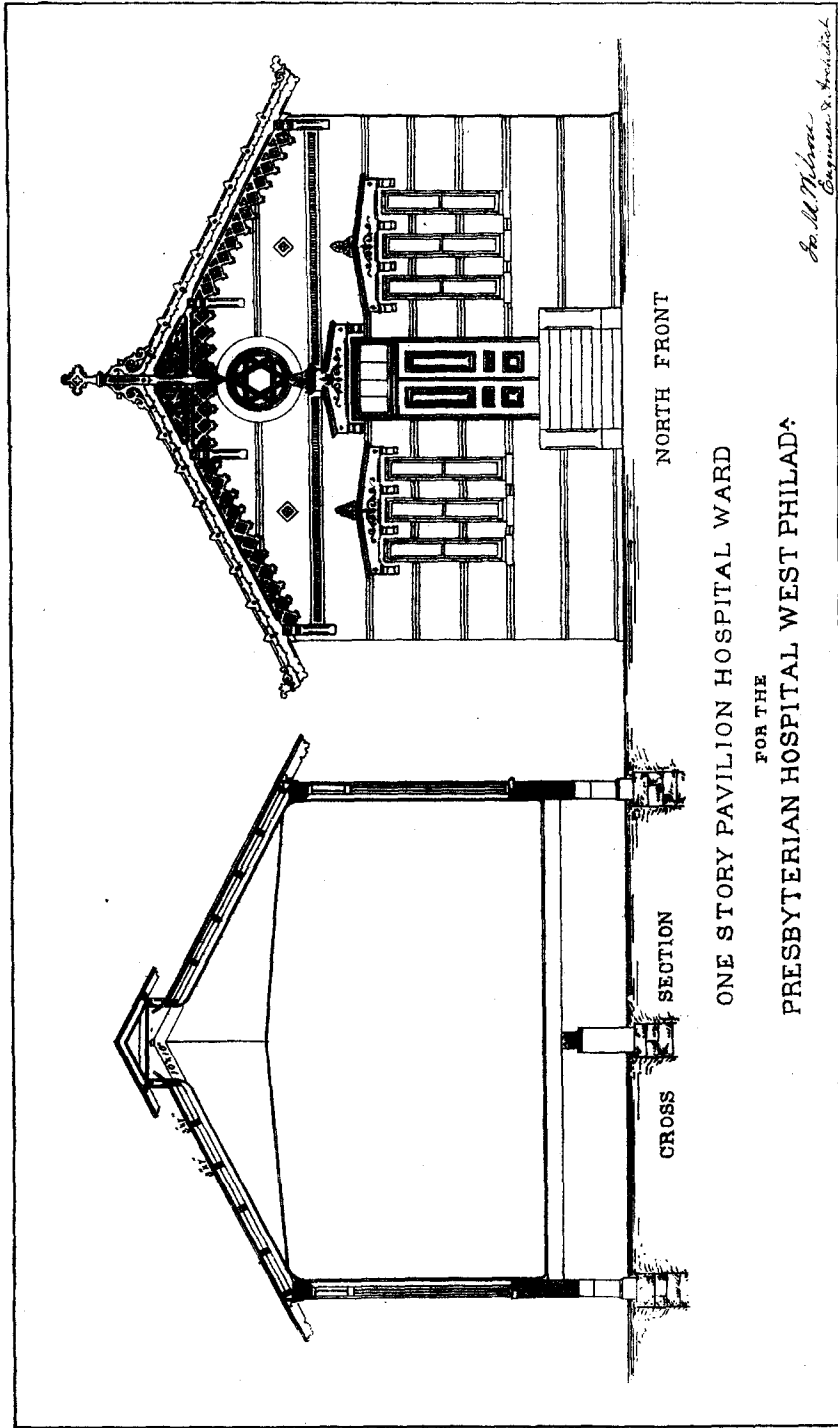
The principles of the arrangement are based on those of the United States Temporary Military Hospitals erected during the late war, and afterwards extensively adopted in Germany during the Franco-German War, and also to a greater or less extent, made use of in some of the later European permanent constructions.

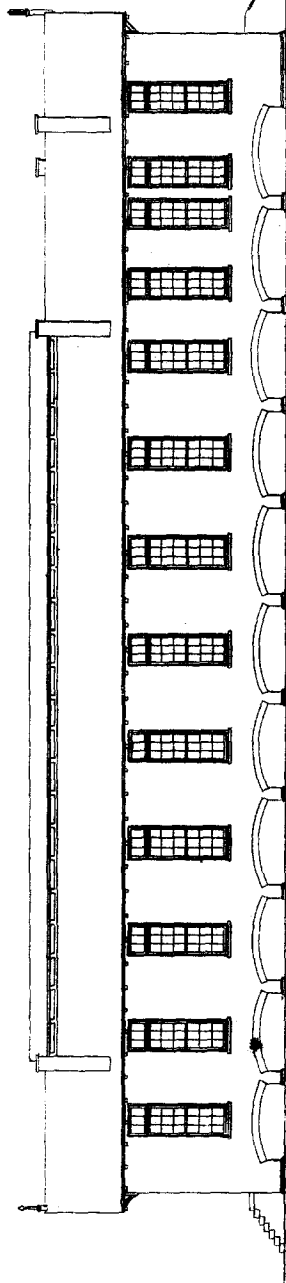
The building, as shown by the accompanying plan, consists of only one story, and is comprised in a rectangular space of 32 feet by 143 feet, its position lengthwise being nearly north and south. It contains the following apartments: A sitting-room of 30 by 16 feet at the south end, communicating directly with a ward-room of 30 by 88 feet, the latter having a capacity of 28 beds. From the north end of the ward-room a hall of 6 feet in width connects with an entrance from the street at the north end of the building. On the west side of this hall are arranged the operating room, $11\frac{1}{2}$ by 16 feet, and the nurses' room $11\frac{1}{2}$ by 14 feet, the latter having a large linen closet $11\frac{1}{2}$ by 5 feet attached to it. On the east side are the baths and

lavatories and water-closets, and a special diet kitchen of $11\frac{1}{2}$ by 10 feet.

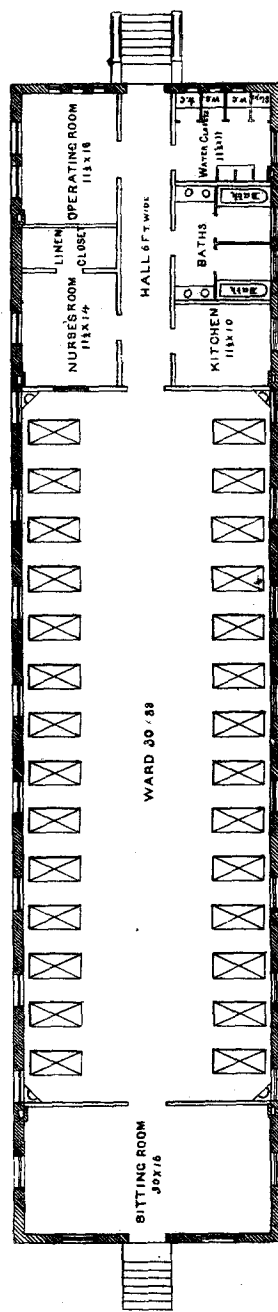
The foundations of the building are of stone. The floor is raised to a level of 5 feet above the ground, and the space underneath left open to the free circulation of air by means of arches in the brick walls along the sides of the building, the area of ground contained within being covered with a good asphalte pavement, so as to prevent any moisture arising from it. The ground around the building is well sloped off so as to drain all water away from it. The exterior walls are of brick, 13 inches thick, and built hollow.

The north, or street entrance, is of pressed brick, with courses of colored brick and Ohio stone dressings, the entrance steps being of granite. Particular care has been taken in building the walls that no opportunity shall be afforded for moisture to get through from the outer to the inner portions of the wall. Between every window, and near the level of the floor, small openings are made from the exterior to the inner air space of the brick walls, with little iron doors to them that may be opened or closed at pleasure. These openings all have permanent wire screens to prevent entrance of vermin. At the top of the wall the air space communicates with the space between the roof sheathing and plastering by a series of openings corresponding with the lower ones. The walls are 15 feet high in the clear from top of floor. The floors are laid with best quality Carolina pine boards, in very narrow widths, tongued and grooved, and put together with white lead, so as to make a thoroughly water-tight job, the spaces between the joists underneath being boxed and filled in with mortar concrete close up to the flooring. The windows are made of double glass, with an air space of $\frac{1}{2}$ inch between them. Each window has an upper and lower sash, that may be raised or lowered, and a swinging transome above. The window sills are of slate. Under each window in the inner face of the wall an opening is made communicating with the inner air space of brick work and fitted with a register that may be opened or shut as desired. The ward room ceiling is finished off on the slope of the roof and is provided with a ridge ventilation for its whole length. Small openings are made up under the ridge ventilators into the space between the plaster and sheathing about every 12 feet, so as to allow of circulation of air through the entire air spaces of wall from the previously mentioned openings below. The ceilings of the other rooms are





LONGITUDINAL ELEVATION.



MAIN FLOOR

horizontal and at a height of 15 feet from the floor. All of the inside doors except the one to the water-closet have transomes, swung on centres.

The plastering is in three coats, troweled down to a thoroughly smooth hard finish, and as soon as perfectly dry in every respect it will be painted.

The roof is covered with slate.

In finishing up the interior work especial care has been taken to make everything as plain as possible; no mouldings, no grooves or ledges to catch and hold dust, but every necessary projection rounded off and made smooth. The doors are not paneled but are made perfectly plain, of tongued and grooved boards in two thicknesses, without beads. The plastering has been rounded at the ceilings, the windows, the angles of the rooms, etc., there being no sharp corners. It is finished at the bottom next to the floor in Portland cement, and there are no washboards. All of the inside woodwork is rubbed down smooth and finished with linseed oil and shellac. The floor is oiled in two coats linseed oil well rubbed in.

A small range is placed in the special diet kitchen, and has connected with it a large circulating galvanized iron boiler to supply bath tubs with hot water.

The building is heated by a hot water circulating apparatus.

A small cellar is placed in the southeast corner of the building, under the sitting-room, and also one in the northwest corner under the operating room, each being 16 feet square. In each of them a boiler will be placed, with radiating pipes carried through the different rooms. Four open grates are placed in the four corners of the main ward, entirely for ventilating purposes.

The plans were prepared by the Engineer and Architect, under the direction of the Building Committee, the gentlemen who composed it being indefatigable and enthusiastic on the system adopted, and any merits the plan may possess are justly due to them.