under water, which could not be prevented from flooding in immediately after the concrete was placed.

Type of Construction

The general type of construction of the superstructure is reinforced concrete columns, beams, girders and slabs. The buildings were originally designed for the flat slab con-



POURING BEAMS AND SLABS FOR FIRST FLOOR, OCTOBER 21ST, 1919

struction, but the beams and slab floor construction was finally adopted because a very considerable saving, amounting to several thousand dollars, was effected by making this change. Not only was the construction of the floors more economical with beams and slabs designed for the same loads and the same factor of safety in the materials, but also the building was made considerably lighter, and therefore, loads on the foundations were lighter and provision for



FIRST AND SECOND FLOORS NEARING COMPLETION, NOVEMBER 26TH, 1919

them was much easily made. The columns are of the square type throughout the building, reinforced with four bars each, with wire lacing, 8 and 12-in. spacing. The mixture of concrete which was used in the columns was 1:1:2, while the mixture in the floors and beams was 1:2:4. The reinforcing for all floors and beams throughout was square twisted steel bars. The beams had bent bars and stirrups, while the slabs had bars bent up over the supports, with square twisted temperature bars at right angles to the main reinforcement.

The stairs were constructed throughout of reinforced concrete with a rise generally of 7 ins., with a 10-in. tread. The stairs and landing slabs were poured after the main construction of the concrete frame. Concrete vats were constructed in the basement, consisting of 8-in. concrete walls, without reinforcement.

Cold Weather Concreting

Another extremely interesting feature of the construction of these buildings, from an engineering standpoint, was the fact that they were constructer during the cold



CONCRETING IN VERY COLD WEATHER WITHOUT TARPAULINS, DECEMBER 10TH, 1919

months last winter, and no trouble was experienced from the effects of cold weather. Contrary to the usual practice, tarpaulins were not used. The entire process of pouring the concrete to prevent freezing consisted mainly of taking extreme care in the proportioning and heating of the materials, also in the method in which they were placed. The writer has always maintained that in this lies the secret of cold-weather concrete. The concrete was placed quickly after leaving the mixer and covered as soon as possible. The forms were stripped from the slabs from one to two weeks after the pouring of the concrete, thereby enabling the concrete to cure, which it will invariably do to -better



ANOTHER STORY POURED-NOTE THAT FORMS HAVE BEEN REMOVED FROM THIRD STORY, DECEMBER 31ST, 1919