

been supported on long girders extending from wall to wall, similar to the floors above, there would be little or no evidence to show that settlement had taken place, except of course at points where it is incorporated with the walls of the tower and the heavy cross walls. Cracks have opened up in the walls of the east and west entrance, which would naturally be expected, but this result could not in any case prove serious. A few of the stone lintels and mullions of the building have been cracked but not to any serious extent. The greatest evidence of this settlement is shown in the basement, which is sub-divided into offices with light brick partitions. These partitions rest on foundations having a very much smaller load to the square foot of area. The result is that when the outside wall settled its tendency was to shear past these lighter walls or to carry that portion of the wall nearest the main wall down with the latter, thus opening up cracks in the brickwork. These partition walls are only one story high, and, outside of the unsightly nature of the cracks, their displacement has no bearing on the stability of the building. From a thorough examination of the basement I find that the relative action between these walls is practically uniform.

The question as to whether settlement of the foundations of the main building is still going on is one that at present I am not prepared to answer. While it is an undoubted fact that considerable settlement has taken place, it may be possible that the soil has become compacted to such an extent that further settlement has stopped. On the outside of the building there is nothing that would point to the fact that settlement had taken place for a considerable length of time. At the rear of the building there is a concrete sidewalk which was laid hard up against the base course of the walls, which sidewalk, I have been informed, was constructed three years ago. If settlement had taken place in that time I would look for some evidence of cracking or distorting where this sidewalk joined the building. It is possible that the ground under this sidewalk may be more or less loose and that the walls, if settling, would carry the sidewalk with them. In this case, however, I would look for a tilting or cracking of this walk, which does not appear. While this point is not conclusive evidence, yet to my mind it is sufficient to raise serious doubts as to whether settlement is taking place at the present time.

In the basement, where the partition walls between the offices join the main walls, there seems to be a certain amount of evidence that a movement is still going on. Several occupants of these offices have informed me that cracks in the brick veneer of the main wall and in the partition wall have been opening up within the last eighteen months, and in one or two cases there seems to be evidence that the cracks have increased in length during the past few months. In other offices, cracks which had been puttyed up two or three years ago, have opened very slightly. As the brick veneer on the main walls, has an air space of one inch or so behind it and is not cemented directly on the main wall, it may be that there is some local action taking place between the partition walls and this brick veneering which may be entirely independent of any present action of the main walls. It would appear, how-

[Mr. Rogers.]

ever, from the consensus of reports, that the movement during the last eighteen months has been very slight. In view of the evidence obtainable, it would seem that the only way to determine whether any action is really taking place on the main walls of the building would be to have a series of accurate readings made on the outside of these main walls, such readings to extend over a sufficient length of time to enable an intelligent and definite report to be made. I have taken steps to have such a series of level readings taken, and have given instructions that checks on these points be taken at regular intervals in order that this information may be obtained.

Main Tower and Cross Walls.

The settlement of the main tower and cross walls is considerably more pronounced than that of the main building. This is undoubtedly due to the fact that the load on the footings is very much higher. On the main tower the average pressure on all the foundations of the piers and walls amounts to about four tons per square foot. On the cross walls the load per square foot varies from three to four tons. As in the case of the main building, it is also difficult to determine exactly what the total amount of settlement has been. While the tower has gone down a certain amount as a whole, it has, however, gone down much faster at the front wall, the rear wall being undoubtedly supported to a certain extent by the other walls intersecting thereat. At the present time the tower has an inclination from the vertical of about twenty-four inches, measuring from the highest point of the tower to the foot of the foundation. This means that the extreme outer edge of the foundation is $10\frac{1}{2}$ inches lower than where it joins the main walls of the building.

There is no doubt in my mind but that the displacement of this tower is sufficient to cause anxiety for its ultimate safety. In moving forward it is taking the main walls of the building with it. The result has been to open up serious cracks in a portion of this wall and cause serious doubts as to its stability. So great has been the movement of this tower that the steel beams of the 4th floor, which were resting on this tower, have, I am told, pulled entirely out and have had to be supported on special girders. The cracks in the walls between the cross walls of the main building and the tower have been opening up continually and have been filled up from time to time as they became apparent. It is, moreover, quite apparent that movement is still taking place. Last September, I believe, all openings at this point were plastered up, but at the present time this crack has opened up again about $\frac{3}{4}$ inch, and at one point daylight can be seen through the wall.

An indication that the tower is still settling is shown by the sidewalk at the front entrance. Last September, I understand, a new sidewalk was laid at this point with a grade sloping away from the building. At the present time this sidewalk has an inclination in the opposite direction, or towards the building, and where it joins the building, is several inches lower than at points in the near vicinity. I would judge from the nature of the soil and the loads that have been distributed upon it that there is every possibility that settlement will continue to go on until the stability of the tower is seriously menaced. This menace is magnified