THE STRENGTH OF GLASS.

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The following experiments were performed in the laboratories of the School of Practical Science under the direction of Principal Galbraith. The results are republished by permission from the Transactions of the Engineering Society of the School.

One of the lower sashes was taken out of a western window of the assembly hall of the school (top floor) and its single light of glass loaded and broken as indicated below. The glass had been exposed to the action of the weather for the past ten years, was well bedded, and the putty was quite sound and hard.

The sash was placed with its weather side up on a carefully prepared box 8 inches high laid horizontally. Sides 12 inches high fastened well together were placed on top of the sash and then paper scales divided into half inches were pasted on each side. Light graduated pointers with their cardboard bases were placed on the surface of the glass. The whole made an arrangement as indicated in the accompanyiny sketch.

Portland cement was then sifted very gently over the surface of the glass care being taken to keep it of uniform depth, for which purpose the graduated pointers and scales already mentioned answered admirably.

The glass measured 36 inches by 36.75 inches and a bag of cement (88 lbs. net) was sifted over its surface, then a barrel (347 lbs.) was gradually added, this was followed by a box of cement of 78 lbs., this by a second of 54.5 lbs., and finally a layer of bricks of 88.5 lbs. was added to the superimposed load. The failure occurred while the second lot of bricks were being weighed.

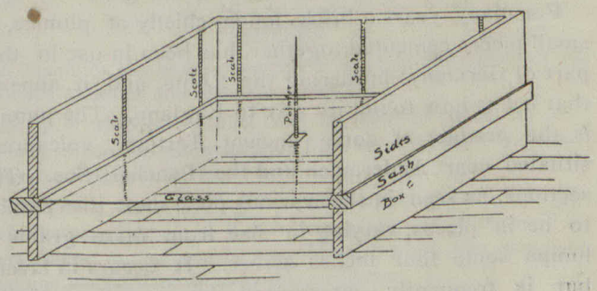
The deflection was approximately 7 / 16 inches under a load of 420 lbs.

After the experiment the cement was passed through a sieve, the pieces of glass were collected and weighed, and from their appearance the glass was what is known to the trade as 26 oz. It was certainly thicker than double diamond and not so heavy as 32 oz.

A sheet of double diamond was next placed in the sash but was not bedded nor puttied, and the load applied as before. This was followed by sheets of 16 oz. and 32 oz. weight respectively.

OLD WINDOW.

With glass probably 26 oz.
Size of glass—36 inces by 36.75 inches.
Weight of glass—15 lbs.
Failed under a uniformly distributed load of—656+15=671 lbs.
Pressure in pounds per square foot—74.55.



DOUBLE DIAMOND.

Size of glass—36 inches by 36.75 inches.
Weight of glass—13.5 lbs.
Failed under a uniformly distributed load of—262+13.5=275.5 lbs.
N. B. This sheet of glass in its unstrained condition was badly warped.

16 OZ. GLASS.

Size of glass—36 inches by 36.75 inches.
Weight of glass—10 lbs.
Failed under a uniformly distributed load of 322+10=332.
Pressure in pounds per square foot—37.

32 OZ. GLASS.

Size of glass—36 inches by 36.75 inches.
Weight of glass—17 lbs.
Failed under a uniformly distributed load of 611.5+17=628.5 lbs.
Pressure in pounds per square foot—69.8.

NOVEL METHOD OF SHORING.

An interesting method of supporting a building while the foundations of an adjoining structure were being laid was recently illustrated in Chicago. An eight-storey building was about to be erected for light manufacturing purposes, the structure being L shaped, and designed to occupy, with the exception of a plot 50 x 80 feet, upon which stood an old three-storey building, the entire area of a lot 150 x 100 feet. The owner of the old building refused to make any agreement for a party wall, and the only alternative left by custom was to support it either by cantilevers or caissons, while the piles were driven for the foundation of the new structure. For various reasons the architect decided to support the adjoining walls of the building on beams resting on bearings which would be 10 feet from the trench where the piles were to be driven. The foundation of the new building contained some 400 piles, 100 of which were driven in a double row around the two adjoining walls of the old building. The walls were cut off below the first floor and supported at intervals of 6 feet on three 20-inch steel beams, resting on bearings 10 feet from the trench. The work was commenced by digging a trench about 6 feet below the basement of the old building, in order to eliminate vibration, then the piles were driven, the first row being within four inches of the wall, and so close that the hammer of the driver at times scraped the bricks of the old wall. Readings were frequently taken, but at no point was the displacement of the building greater than ¼ inch. It is stated that this is the first time this method has ever been used in Chicago under such circumstances.