

PASSING OF AIR THROUGH CEMENT WORK.

So far, there are but few records of the exact porousness which would admit of air passing through or absorption by capillary actions of different cement and lime mortars. One of the most noteworthy, which is determined by careful tests, was made by Professor Lang, who made examinations of different artificial building blocks, mortars and cements, both in their dry and wet condition, of which the following table shows the proportion of air passing through different materials at ordinary pressure or exposure :

Materials.	Dry	Wet
Lime mortar	1.00	0.07
Portland cement mortar	0.15	0.00
Portland cement concrete	0.40	0.00

The above shows that there is no communication of air through wet cement work of any kind, under natural, ordinary conditions as occurring in general buildings. In the dry state, cements have about 1-7 the porosity of common lime mortars.

It is estimated that with the density and nonaffinity for air the ability for drying out or evaporation of moisture from cement work is also lessened, which goes forward comparatively speedy in lime mortars.

LIGHTNING MOST DANGEROUS IN THE COUNTRY.

PEOPLE are afraid of lightning, perhaps to an extent disproportioned to its disastrous effects on human life. The Weather Bureau of the United States has been collecting statistics as to persons killed and property burned by lightning stroke. According to these, 312 inhabitants of that country, on an average, are struck by lightning each year. Twenty-five hundred were struck during the last nine years. Farmers suffered most, probably because of their exposed occupation, for the danger from lightning is found to be four times as great in the country as in the cities. January naturally is the least dangerous month, and July is the most dangerous—123 persons were killed in July, 1893. During the eight years ending with 1897, 7,558 buildings, valued at \$17,672,772, were destroyed in the United States by lightning; 4,891 of these were barns. Comparatively few churches were struck. In 1898 buildings valued at \$1,441,880 were destroyed. New York State headed the list with 395. There were no disastrous strokes in Idaho, Arizona, California, Oregon, Nevada, or Utah.

It will be observed that almost two-thirds of the buildings struck were barns. Lightning is attracted towards them because after harvest their contents of hay or grain cause a vapor to arise which serves as a sort of conduit for the electric fluid. Better ventilation would, in a measure, cure this. In the same year 1,842 animals, valued at \$48,000, were killed in the United States by 710 strokes of lightning. This mortality was unequally divided among cattle, horses, mules, pigs and sheep, whole flocks of the latter being killed by single volts.

There is no means of finding out the exact number of trees struck, but it is interesting to learn that the list of liability is headed by the oaks. Firs, beeches, pines, larches, ash and birch trees are most liable to be struck in the order named, on account of their conducting qualities.

STAINING LIGHT WOODS.

The employment of alkaline manganates for imparting to light woods in furniture and floors an attractive, uniform and durable walnut brown is useful. The action depends upon the decomposition of salt in the pores of the wood, with the separation in them of very finely divided brown hydrate peroxide of manganese, and an addition of magnesium sulphate to the solution is found to hasten the reaction. In practice the following method is said to be successful: Equal parts of manganate of soda and crystallized epsom salts are dissolved in twenty to thirty times the amount of water, at about 144 degrees, and the planed wood is then brushed with the solution; the less the water employed the darker the stain, and the hotter the solution the deeper it will penetrate. When thoroughly dry, and after the operation has been repeated if necessary, the furniture is smoothed with oil and finally polished, the appearance being then really beautiful. Before smoothing, however, a careful washing with hot water will have the effect of preventing the efflorescence of the sulphate of soda formed. In the treatment of floors, the solution may be employed boiling hot, and if the shade produced is not dark enough, a second application of a less concentrated solution is made; after it is quite dry it is varnished with a perfectly colourless oil varnish. On account of the depth to which the colouring solution penetrates, a fresh application is not soon required.

THE LUMINOUS PALACE.

The Luminous Palace, which, according to a late issue of the Electrical World and Engineer, is a feature of the Paris Exposition, is thus described by our contemporary.

This building possesses considerable architectural merit, and is attractive by day as well as by night, although its night appearance is its chief glory. Large masses of glass in the rough are incorporated in the walls of the building, so that the walls may be said to be practically constructed of that material.

The glass is very irregular in form and is used without any previous preparation or finishing. It is of a green color, the shade varying according to the thickness of the glass. The main entrance to the building is reached by two flights of wide winding stairs made entirely of glass, cut into slabs of the proper length and thickness, and of the same color as that used in the walls. Glass is used in the construction of this building wherever it is possible to use it. The interior of the building is brilliantly lighted at night by electric light, which, shining through the transparent walls, presents a beautiful and fairy-like scene as viewed from the outside. The glass in the walls being of irregular shape and thickness, has the effect of breaking the light into rays of different intensities and shades of color, which produce a charming effect. The stairways glow with a soft diffused light, the glass used in their construction having a flat, ground surface. An electric fountain is erected in front of the main

entrance, glass also being used very plentifully in its construction.

BUSINESS NOTES.

Evans Hardie, painter, Hamilton, Ont., has ceased business.

P. Brouillet & Co., builders, Montreal, have registered partnership.

Geo. H. Metzler has commenced business at Sydney, N.S., as painter.

Brethour, Ferrier & Company, plasterers, Montreal, have registered partnership.

S. V. Smith, contractor, Parry Sound, Ont., is announced to have assigned to Simon Cotton.

J. M. M. Duff has been appointed curator of the estate of Wood & Company, painters, Montreal.

Mrs. Emeric Byron has registered proprietress of the business of E. Byron & Company, contractors, Montreal.

Mrs. Richard Tees has registered proprietress of the business of Tees & Company, desk manufacturers, Montreal.

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