WATERPROOFING WALLS.

An interesting test of materials said to render walls and floors impermeable to moisture has been conducted by the military authorities at Saarburg. A wall, total length 70 ft., height 7 ft,, thickness 1 ft., was especially erected for this purpose, and divided into ten sections, which were impregnated or treated with the different waterproofing materials. After standing for eight weeks, the wall was thought sufficiently dry to start the experiments. To a hydrant supplying water at a pressure of 150 lbs., a hose was fixed and directed for 15 minutes against each of the sections from a distance of 35 ft. Seven of the sections proved badly soaked, in some the water was actually dripping when they were taken down. Three sections were perfectly dry. Upon these the hose was once more turned for two hours, when the walls were found perfectly dry, not a trace of moisture having penetrated. The "Zeitschrift für die Gesammte Kalte-Industrie" does not say anything about the other materials and their mode of application, but states that the three intact sections had been coated with Wunner's patent mortar, which is also supplied as an admixture to white-wash and mortars. This substance forms a hard shell, perfectly impenetrable to moisture, and not affected by atmospheric action. The mortar is recommended for any kind of building, water reservoirs, walls, floors, conduits, and has the advantage over asphalt cloth and tar coatings, which are also impermeable, that it is not injured by heat.

STRENGTH OF CONCRETE.

Experiments on a large scale to discover the strength of concrete are rarely undertaken, and in consequence the utility of the material is not sufficiently realized. The Law Library of Columbia University has a concrete dome, and prior to its construction one on a smaller scale was tested. The experimental dome was 15 feet diameter and 6 inches throughout, the rise at the centre being 6.44 inches. The material was made of four parts of stone, two of sand and one of Portland cement. It was built up within a circular tie of angle iron 6 inches by 6 inches by ½ inch. After completion, the dome was covered with 2 inches of damp sand for fifty-eight days. A bed of sand was then laid over it to support a circular platform 5 feet in diameter. About 60,000 lbs. of bricks were laid on the platform before any deflection could be detected, and 80,000 lbs. were supported for six days without any sign of failure becoming apparent. It was intended to test the dome to destruction, but more than 80,000 lbs. could not be applied without danger to the men employed.

BUSINESS NOTES.

Boutillier & Cadieux, plasterers, Montreal, have dissolved partnership.

The assignment is announced of A. Lebeau & Co., a contracting firm of Montreal.

T. Holliday has purchased the interest of Tobias Foley in the Stratford Bridge & Iron Works Co., and is now sole owner.

MUNICIPAL DEPARTMENT

MUNICIPAL CONTROL IN GERMANY.

Municipal ownership of electric light and power is in operation in the following cities of Germany: Bremen, Cassel, Darmstadt, Dusseldorf, Elberfield, Hanover, Colonge, Konisberg, Lubeck and Pforsheim. Except Hanover, all these cities also own the gasworks. Aix-la-Chapelle, Chemnitz, Frankfort, Strasburg and Stuttgart have all built their own electric works, but lease them for operating to private corporations; and with the exception of Chemnitz the gasworks are also managed by private companies. In the following cities private corporations have built electric works, with the understanding that the cities can purchase them under certain conditions: Altoona, Dessau, Gera, Hagen, Heilbronn, Leipsic, Mulhausen, Settin, and Zwichau. The gasworks are owned by private companies in Dessau, Hagen, Mulhausen and Zwichau.

COST OF BRICK PAVEMENTS.

The following table, showing the number of miles of brick pavement and the cost per square yard in 1897, is an extract from a report of a committee on street paving appointed by the American Society of Municipal Improvements:

Name of city.	Population.	Miles of brick pavement.	Cost per sq. yd. in 1897.
Albany, N.Y.	95,000	12.76	$1.76
Alton, Ill.	10,000	1.34	1.19
Altoonia, Pa.	30,000	58	1.60
Atlanta, Ga.	66,000	2.00	1.88
Bloomington, Ill	20,000	10.50	1.40
Bradford, Pa.	10,500	6.50	1.70
Brooklyn, N. Y.	806,000	2.00	2.16
Carbondale, Pa.	10,800	3.75	1.90
Cedar Rapids, Mich.	18,000	12.26	99
Cincinnati, O.	296	38.58	1.70
Cleveland, O.	261,	38.32	1.12
Columbus, O.	88,000	72.74	1.00
Dayton, O.	61,000	11.99	1.29
Detroit, Mich.	206,000	13.80	1.56
Erie, Pa.	40,600	5.97	1.50
Evansville, Ind.	50,700	17.00	1.51
Grand Rapids, Mich.	60,000	5.46	1.50
Lafayette, Ind.	16,000	2.23	1.48
Newark, N.J.	182,000	3.09	2.05
Rochester, N.Y.	134,000	4.68	1.50
Troy, N.Y.	60,000	2.35	1.81
Toledo, O.	81,000	25.42	1.25 / 95

The committee reported that the average cost of brick paving in one hundred and forty-four cities in the United States was $1.56 per square yard. In different cities different classes of foundations for brick pavement are used, some on macadam, some on brick pavement laid flat, and some on concrete foundation. The report does not show what foundations were used in making up the cost as shown in the table.

COST OF BROKEN STONE ROADS.

The cost of broken stone for building roads is not so great as many suppose. It can be bought at the crushers for 40 cents per solid yard, and the railroad will freight it forty miles, or less, at about 50 cents per cubic yard making a total of 90 cents; but suppose we call it $1. Then if the roadbed is nine feet wide and the stone is piled on a foot deep, a cubic yard will cover three feet linear at a cost of $1, making one mile (1,760 yards) cost as many dollars. But as only about nine inches are necessary, one-fourth of this amount, or $440, should be deducted, making the exact amount only $1,320, which is cheap enough for a first class road, the material for which must be brought forty miles by rail.—Indiana Farmer.

PAVING BRICK FROM COPPER SLAG.

A concern in Germany, the Mansfield Copper Company, at Eisleben, Thuringia, has placed a paving brick upon the market made from copper slag. The slag is led directly from the smelting furnaces into iron molds, each possessing a capacity of 36 bricks. The bricks have to be carefully annealed by very slow cooling. If allowed to cool off at once in the air they would become useless, brittle, glassy masses, which would break up under traffic. The molds are therefore, first well heated, then, so soon as the slag is poured in, the whole is thickly covered with sand and is not uncovered for at least 72 hours. By this time the bricks are cool enough to be taken out of the mold with tongs and are sufficiently annealed. When quite cool, each brick is tested by a strong blow with a hammer, which cracks those that are not sound. There is no probability of copper slag or any other slag bricks being very serious competitors with vitrified clay, but we would do well to let one point in the manufacture of these bricks impress us. A point which we all know very well but sometimes neglect, that is the desirability of well annealing, that is to say, of very slowly cooling our bricks.

ASSESSMENT OF A FACTORY CHIMNEY.

The question whether a factory chimney is real estate or part of the machinery is now occupying the attention of the city assessors of Montreal. The Montreal Street Railway Company claims that its chimney, which is now assessed as real estate, is an important part of the mechanical plant and, as such, is exempt from taxation. The company's power house cost about $75,000, and fully one-third of this sum was expended upon the erection of the chimney. The assessors themselves are not agreed upon this point, as in some of the wards chimneys are assessed as real estate, while in others they are exempt.