

MUNICIPAL DEPARTMENT

TO MUNICIPAL OFFICERS.

The CONTRACT RECORD is desirous of publishing, as far as possible, advance information regarding projected works of construction in all parts of Canada, such as sewerage and waterworks systems, railways, street pavements, public and private buildings, etc. Municipal officers would confer a favor upon the publisher by placing at our disposal particulars of such undertakings which are likely to be carried out in their vicinity, giving the name of the promoter, character of the work, and probable cost. Any information thus furnished will be greatly appreciated.

AN INVESTIGATION OF THE BENEFIT OF STRUCTURE ON THE WEARING POWER OF PAVING BRICK.*

By PROFESSOR EDWARD NORTON, JR.

In 1892 it was my fortune to conduct a series of experiments on the general properties of paving brick for the Ohio Geological Survey. I say experiments, though that is hardly the proper term to apply to the work which I did. My investigation consisted at that time of obtaining samples, selected in each case by the manufacturer, from some forty-five paving brick plants in the limits of Ohio. These samples were assembled at Columbus and tested by abrasion, absorption and crushing. The samples being selected by the manufacturers and coming from plants which used clays of all descriptions, from the alluvial clays of the Ohio river up to the shales and fire clays of the coal measures of Ohio, naturally gave a very wide range of qualities owing to the great diversity of materials used. Not only did variations in character come from this cause, but also from the differences in structure due to methods of manufacture and similar differences of vitrification due to varying conditions of burning and cooling.

Under these circumstances it was, of course, impossible to draw accurate conclusions as to the effect of any particular type of machine, and well nigh impossible to draw even broad conclusions as to one type against another type. A careful review of all the data obtained in making this test showed that side cut brick had a higher average in wearing power than end cut brick. Eliminating so far as the nature of the samples made it possible to do so, differences in machinery and kind of clay used, comparisons between shale end cut brick and shale side cut brick showed a slight difference in favor of the latter.

Also, the subject of repressing was considered in this same connection and an attempt was made to find out the effect of repressing by considering the general average of all repressed brick against all

plain brick, and also in several specific instances comparisons were made between repressed brick and plain brick of the same manufacturer. In this test the advantage seemed to lie with the repressed brick.

Professor H. A. Wheeler, of St. Louis, has assured me that he has recently gone carefully over the data of my test, and while he was unwilling to believe the conclusions which I there deduced he was still unable to dispute that all the evidence pointed that way. The unsatisfactory nature of this test, however, has left me ever since its completion with a desire to probe the matter to the bottom.

In July, 1895, the commission on paving brick test of the National Brick Manufacturers' Association authorized me to begin a series of tests looking towards the solution of this question. A very partial and incomplete verbal report was made at Atlanta in December, 1895. Since that time the work has been pushed along with what speed was possible, and I have now ready the result of the first investigation of this sort in which the conditions of variations have been practically eliminated and in which a real comparison is possible.

THE SAMPLE OF CLAY.

The sample of clay which was used in making this structure test consisted of about ten tons of shale material, which was ground by dry pan, screened, and run into a pile on the floor. This material was then shoveled over several times so as to mix the earlier and later portions of the charge. When it was considered to be homogeneous it was then tempered into pugmill and packed as fast as tempered into barrels of which some sixty were filled. Three barrels of this standard sample of clay were sent to ten different manufacturing establishments, all of them makers of paving brick or manufacturers of paving brick machinery.

THE MANUFACTURE OF THE BRICK.

With the sample a specific set of directions was sent asking each one to unpack

the clay, retemper with as little water as possible, put it into their brick machinery, the nature of which was specific in each separate case, and make the whole amount into brick without admixture of any other clay material. The first third of the brick which came from the machinery were directed to be rejected and the samples for future work were selected from the middle and rear portions of the charge, hoping by this means to absolutely avoid intermixture with such clays as the machinery had been working previous to its use in this test. The bricks on issuing from the machine were then directed to be dried on floors without the aid of artificial heat, so that the greatest uniformity in drying could be attained. When dry the samples were packed in saw-dust and sent back to the factory which made the original sample of clay.

THE BURNING OF THE SAMPLE.

The execution of this work being intrusted to so many different men and under such a variety of working conditions, naturally took some time, but after some months the brick made by these different machines had been assembled at the original point. There they were marked and set in a kiln in a compact body, as nearly as possible in the same course and at the same distance from the wickets or fire holes, so that air checking or any imperfections of burning which one brick might happen to meet would probably be shared by the other portions of the series. This kiln was fired as usual and in due time its contents were drawn, and the sample bricks were then packed in boxes divided into two lots, part of them being sent to Mr. F. F. Harrington in St. Louis, for testing by cross breaking and crushing, while the majority, or possibly four-fifths of the series, was forwarded to me.

(To be Continued.)

An amendment to the County Councils Act is proposed to be made at the present session of the Ontario legislature. It reads as follows: "All county councillors shall ex-officio be Justices of the Peace for the whole county or union of counties in which their respective divisions lie; and no county councillor after taking the oaths or making the declarations as such shall be required to have any property qualification or to take any further oath to enable him to act as Justice of the Peace."

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* Paper read before the National Association of Brick Manufacturers of the United States.