

One of the most modern, most economical, and most practical of all bricks, says the writer, is the sand-lime brick. We find buildings constructed of these bricks in almost every portion of the Dominion. Their pleasing, warm grey tone, resembles very closely Indiana limestone. Architects often complain that colour schemes are impossible with sand-lime bricks. This is not so, for by the aid of artificial colouring materials, an unlimited range of colouring shades can easily be produced. These colours are numerous and are proof against climatic changes. More than this, they are uniform, thus rendering it unnecessary to sort them in order to obtain a sufficient quantity of a particular shade. In this manner, architects are enabled to obtain colour effects not possible with any other building material.

As the name denotes, sand-lime brick is made from a mixture of sand and lime. This mixture was used in even the most remote ages for mortar. As a material for the production of an artificial stone, it, however, found very little use.

It was not until the beginning of the nineteenth century that the town of Postum, in Germany, which is surrounded by large sand hills, utilized sand with a mixture of lime in the production of bricks. These German bricks were made by moulding the mixture of sand and hydraulic lime. The green bricks were allowed to weather for a period of about six months, at the end of which they were ready to be erected into walls. It was discovered by Dr. Michaelias, of Berlin, that at the time of curing it could be very much accelerated by subjecting the fresh bricks to the action of steam. This experiment proved successful, and the number of sand-lime brick plants in Germany increased with great rapidity. One of the oldest and yet the most enduring and dignified edifice built of sand-lime brick or "mortar brick" was the Howard University at Washington, D.C., constructed by General Howard in 1867. When the crude method of manufacturing these bricks is considered, together with the permanency of the building which they composed, the admixture of sand and lime into a composite brick, especially under the advanced modern conditions by which it is produced, most assuredly justifies their adoption by present-day architects. The steam hardening process under high pressure was introduced in America in 1910, but the lime at that time became an aggregate in a raw state, and was stored in silo or bin to slack with the sand. This did not prove satisfactory, but it was discovered that by hydrating the lime through a steam process before mixing with the sand the hydrate product is made possible, and that it has proven itself a commercial success.

Sand-lime brick plants have been established in various portions of almost every province in the Dominion, and in some sections they have proven more successful than in others. In those communities where there is not to be found a good brick clay that can be burned at a reasonable cost, sand-lime brick has done much to relieve the situation, but even in the city of Toronto, where there are in close proximity possibly the finest clay beds in Canada, we find residences, warehouses, and churches built of sand-lime bricks. In the West, where good common clay brick is very hard to obtain, we find sand-lime brick very much in use. All of Winnipeg's recent school buildings have been built of this material, together with a large number of warehouses and residences in the same city. Port Arthur and Fort William also have a number of most noteworthy structures constructed of this material. It should be of considerable interest to architects and contractors, as well as brick manufacturers, to know something about the process of manufacture, raw materials, the method of treatment, mixture, time and cost of manufacturing, and the margin of profit in connection with the merits of this exceedingly important building material.

With regard to the process of manufacture, of this particular brick, sand and lime constitute the raw material. The lime is hydrated; it is then mixed in the proper proportions with dry sand and the required amount of water is added. The mass is then thoroughly pressed into the form of bricks, and these bricks are hardened by the action of steam and high pressure. There are two kinds of sand that may be used in the manufacture of sand-lime bricks, one kind inferior to the other. One occurs as fine round particles; the latter in the form of sharp and irregular grains. For the purpose of sand-lime brick manufacturers, the latter kind is preferable, although the former kind of sand may be used to fair advantage. The presence of clay in sand is most injurious; it will not make a strong brick. The lime used in the manufacture of sand-lime bricks must be a high calcium lime, and thoroughly hydrated. The mixture used for the manufacture of sand-lime bricks is variable, and according to the quality of sand and lime the usual proportion is about six per cent. by weight of hydrated lime to ninety-four per cent. dry sand. Excess of lime is very injurious to the strength of bricks.

Time and cost of manufacture of any building material are very important features in connection with their production. It is maintained by the sand-lime brick interests that their system of brick making produces a perfect product in very much less time than is possible in the

manufacture of ordinary clay bricks. Another contention of these manufacturers is the cheapness of manufacture. Raw materials are plentiful and cheap in most localities, and it is maintained that through this particular process of manufacture of bricks there is a great saving in time, labour, and fuel.

Building Notes.

AUCKLAND.

Messrs. Wade & Wade report:—Convent at Remuera, opened June 25th last, also contract for factory for Dominion Laundry Co., Hobson Street; £3800.

In hand—Clark's old warehouse to subdivide; tenders about first week July. Five-storied building, Queen Street, near Mutual Life. R.C. Church, Hamilton (about to start building); £6000. Preparing plans for two-storied brick building, Bank N.Z., Pukekohe. Residence for headmaster, Dilworth Institute, Re-

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August, 1911. 1/-

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