

probable cost, and so far as practicable the proportion of total cost that should be assumed by the city and harbor respectively.

In accordance with these resolutions, the city and harbor engineers have, I understand, examined into six schemes with this end in view, the cost ranging from \$4,624,755 to \$3,827,894. The scheme they have recommended for adoption is known as No. 6, at a cost of about \$3,009,000. It contemplates the widening of Commissioners and Common streets to about 75 feet east of St. Peter street, by taking up a portion of the harbor property, and to the same width west of McGill street, by expropriating private property between St. Peter street and McGill street, where a restricted width of the wharf would not allow of widening on that side, and value of the building and property owned by private individuals on the city side would make it too costly to attempt. Therefore, the present width is retained. It is proposed to raise the wharves to Commissioners street level, so as to abolish the ramps, and the city is to be protected from flood by a parapet wall, with openings and moveable gates. By this means, Commissioners street would be at its narrowest width be 75 feet and would average nearly 90 feet. The estimated cost of the scheme is:

For works	\$2,739,372
For Land and Buildings	88,522
Total	\$2,827,894
Of this the city's portion would be	708,428
and the harbour's portion would be	2,119,466
Total	\$2,827,894

The report says that scheme No. 6 answers all necessary conditions, and in proportion to its cost it better suits the combined interests of the harbour and city than any other scheme of which they have any knowledge, and they therefore recommend the adoption of its main features with a view of its being carried out at such rate as circumstances may warrant. This plan was adopted by the Council of the Board of Trade on the 4th May, 1889.

Yesterday afternoon the City Surveyor at a meeting of the inundation Committee, reported on three alternative schemes for access to the wharf in connection with the harbour improvements and flood protection schemes.

No. 1 is for a tunnel from Craig Street, east of St. Denis Street to Water Street, also including the construction of ramps at Barclay and Gale Streets, at a cost of \$400,000.

Scheme No. 2 is a tunnel from Craig Street under Champ de Mars to a point at or near the Nelson Monument, and then an open cutting as far as le Roger and another tunnel to St. Paul Street including ramps at Barclay and Gale Streets, at a cost of \$230,000.

No. 3 is a tunnel from Craig Street under Brook Street right down to the wharf level, and a ramp at Gale Street, at a cost of \$186,000.

Mr. St. George prefers the last scheme as being most economical and useful. No. 1 he considered extravagant and unsatisfactory, as it only leads to Walter Street and not to the wharves. No. 2 would destroy the market place on Jacques Cartier square, and is not the situation where the entrance for heavy traffic is needed, the manufactories being all far to the west or east of that side. No. 3 he recommends as embracing all these points and much cheaper than either of the other schemes.

I understand that in the near future "blue prints" of the proposed improvements will be prepared for the use of the City Counsellors and their friends, and I will probably be able to obtain one.

PROPER PREPARATION OF CLAY.

THE thorough preparation of clay is, for any variety of brick a most essential consideration, says the *Brickmaker*. In order to produce a brick of the first quality, with good surfaces, sharp and clean arrises and one that will have sufficient density, and a clear, metallic ring, there must be thorough disintegration and complete amalgamation of all the clayey particles. In the near future the proper working of clay, its thorough tempering and preparation will be regarded as of as much importance as is now the manipulation and mixture of ores for the production of iron and steel. There has been a great deal said in times just past against the method of manufacturing brick by the semi-dry process, but in the majority of instances where this method has been employed and found to yield unsatisfactory results, the principal cause for this lack of success will usually be found in the improper grinding and mixing and other essential details relating to the preparation of crude clay.

If it is desired to produce a superior quality of hand made or machine made brick, the clay should be made smooth by proper preparation and thorough tempering. If this is left to the judgment of careless employees the work is usually slighted and the proprietor of the yards should see for himself that the clay is prepared as it should be.

When clays are not properly ground the dry lumps of the material imbedded in the body of the brick cause it to break or crack in many places, and this is of itself indisputable evidence of improper preparation of the clay from which the brick was made. When the clay to be utilized is of a bluish variety, lumpy, rough and difficult to soak, it will amply pay any manufacturer to use a suitable crusher for the reduction of the clay, as otherwise the bricks, although strong, will be rough in appearance and often not marketable at remunerative prices.

MANUFACTURES AND MATERIALS

NOTES ON TIMBER FOR BUILDING PURPOSES.

THE White Pine (*pinus strobus*) is the most useful of all the pine family and forms our staple in carpenters' work, and we apply it to all the purposes to which "Northern" pine is put in Europe. White pine is a native of Canada and stands well its native air, but in England where it is imported under the name of "Yellow pine," it is not so durable, being affected by the damp of the atmosphere. The wood is light, soft, remarkably free from knots, easily worked, and may be recognized by the minute elongated dark specks, when planed, which run over the surface in the direction of the grain. It can be obtained in logs 14" to 26" square, and from 18 ft. to 40 ft. in length; also in deals 2" to 3" thick, 24" wide, and from 10 ft. to 20 ft. long.

Canadian Red pine (*P. rubra*) is a variety of the Northern pine, grown so extensively in Norway, Sweden, Russia and Prussia, and used chiefly in Europe, but it is superior to it, having less sap and few knots, and it is not so apt to shrink or warp in seasoning.

Canadian yellow pine (*P. mitris*) is inferior to the red but similar to it.

Tamarack, or American Black Larch (*pinus pendula*) is one of the pine tribe, but of a harder and much more durable nature than the foregoing pines. It is especially suited for situations exposed to the weather, for floors and stair cases where there is much wear, and when oiled and rubbed, has a very fine, rich light yellow colour, or sometimes a brownish white. It warps much as it seasons, but stands well when thoroughly seasoned. The white kind is more common than the darker. The tree grows to a mean size of 45 ft. high and 33" in diameter. It is considerably stronger than oak though not so strong as teak.

Teak (*tectona grandis*) is one of the most useful of timbers. It comes chiefly from Burmah and Pegu but also from Siam and Java. It is a large tree, often growing to 100 ft. high and 10 ft. circumference. The wood is rather variable in appearance, depending much upon the climate of the locality in which it has grown; the color varies from a brownish yellow to a deep brown, the grain is clean and straight, it is easily worked and shrinks little in seasoning, but owing to a liability of its fibres to separate in a longitudinal direction, it does not be worked with care. Teak is very durable in all situations. It has not corroded iron as oak does and it is suitable for any purpose.

Oak. There are several kinds of oak in the market. American White Oak (*quercus alba*). British oak of two or three different kinds, Baltic Oak from Dantzic, Memel and Stettin, "Clapboard" from Norway, and "Dutch wainscot" from Holland. British oak (*quercus pedunculata*) is one of the strongest and most durable of European woods. Its place has of recent years, however, been taken by the pines and firs for general timber construction, owing to its scarcity and cost. The wood of a slightly reddish tinge, is comparatively free from knots; the grain is free and the large medullary rays numerous. It can be procured in logs from 9" square and 10 ft. long to 20" square and 26 ft. long—the larger sizes, however, are more difficult to procure.

Another species from England is the Seaside printed oak (*Q. sessiliflora*) and although the wood is somewhat softer when young, it is nearly if not quite equal to the *quercus pedunculata*. Its colour is darker and more uniform, the grain less varied and the larger medullary rays are not so abundant. When old the gloss and smoothness of the grain makes it appear like chestnut. It is liable to warp and become shaky in seasoning but it is very tough and difficult to split into lathes and pales.

Baltic oak is inferior to British, and is distinguished from it by the comparative straightness of the grain and freedom from knots. It is close and compact in grain, although rather short, the Memel variety is finer in grain than the Dantzic. Logs are from 10" to 16" square, and from 18 ft. to 30 ft. long. Planks vary from 2" to 8" thick, 9 inches to 15 inches wide, and 24 ft. to 35 ft. long.

Oak under the name of "Clapboard" comes from Norway and from Holland under the name of "Wainscot." The latter may be distinguished by the absence of white streaks which cover the surface of the "Clapboard" in all directions. These two kinds are less liable to warp and split when cut thin than English oak. They are, however, very much softer, and in other respects inferior to it.

The American white oak is very tough and pliable, straighter in the grain than British oak, but inferior to it in durability. The sizes obtainable are logs 12 inches to 24 inches square and 25 ft. to 40 ft. long. The colour of the wood is a whitish brown.

All oaks shrink more or less in seasoning and in fact every time oak is planed it will shrink, but the white oak shrinks less than any kind, and almost without splitting, and is therefore considered best for constructive purposes.

Oak should not be placed in contact with iron, as it leads to the decay of both materials.

Chestnut (*castanea vesca*) flourishes in sandy soils and is found in most parts of England, America (North) and Africa. The wood resembles oak in appearance, but it has not the large and distinct medullary rays. The