

Kiln process. H. O. Chute, superintendent of the company, was employed by the Standard Chemical Co. to erect a retort plant at Fenelon Falls, which has been in operation since last fall. When the Deseronto Iron Co. decide to locate at Deseronto, assuring a market for the charcoal, the Standard Chemical Co. acquired the rights of the Burrel patent, owned by the Rathbun Co., and decided to enlarge the plant by putting in retorts. This plant will have the largest single bench of retorts in the world, and many new features of construction are being introduced, which allow of a more economical working and handling of all products by machinery. We are indebted to H. O. Chute, superintendent of the Standard Chemical Co., for the information contained in this article.

#### THE OTTAWA VALLEY CANAL.

The report of the special committee of the Dominion Senate, appointed to examine into the feasibility and advantages of a water-way connecting Lake Huron with the St. Lawrence, via the Ottawa river, has been published, and is accompanied by three maps of the proposed Montreal, Ottawa, and Georgian Bay Canal, including a plan and profile. The report as issued seems to be entirely in favor of the construction of the work. The witnesses examined, who included S. A. Thompson, Duluth, U.S.; Major-General Gascoigne, at the time Commander of the Canadian Militia; Marcus Smith, M. Inst. C.E., Ottawa; James Meldrum, M. Inst. C.E., London, Eng.; O. Higman, Dominion Electrician, Ottawa, and H. K. Wicksteed, C.E., Cobourg, Ont. A series of questions were also sent out to a large number of those who might be supposed to be either most familiar with the locality and the nature of the construction required in the particular work in question, or whose knowledge of like questions and of transportation generally gave their opinion weight with the committee. Replies were received, among others, from Sir Wm. Van Horne, Walter Shanley, C.E.; T. C. Clark, M. Inst. C.E., New York; Andrew Bell, C.E., Almonte, Ont., and R. W. Shepherd, Man. Dir. of the Ottawa River Navigation Co.

The bright side of the picture seems to have been presented to the Senate more fully than the reverse. There are several features of the proposed work which are not very fully dwelt on in the report. The estimates of the cost discussed were largely those proposed for a twelve-foot waterway, and the canal under discussion is to have a depth of fourteen feet. The report of T. C. Clark, M. Inst. C.E., made in 1860, is quoted, in which he says: "The distance is 430.76 miles, of this 351.81 miles are already a perfect natural navigation, and require no improvement, and it is perfectly practicable so to improve the remaining 78.95 miles as to convert the whole chain of water into a first-class navigation for steam vessels, and to reduce the length of canaling 29.32 miles, or exclusive of the Lachine Canal, to 20.82." In the late report he says: "To improve the navigation of such a river system is comparatively easy, for the greater part is already accomplished." Marcus Smith, M. Inst. C.E., in his evidence before the committee, says of the river stretch: "I think there is only one place in the Ottawa that we need to make any dredging at all for twelve feet, but there may be some more for fourteen feet." The evidence seems to point to the use of the Ottawa river as part of the canal in

its present state, or when improved at a comparatively low cost. The witnesses, who were heard through their answers to the series of questions, had not the same opportunity to bring forward all the facts at their command as had those who were examined by the committee. Andrew Bell, C.E., is quoted in the report as speaking enthusiastically of the electrical possibilities of the water along the canal, but does not give any evidence as to the condition of the lower Ottawa. Mr. Bell was the engineer in charge of the construction of a government dam in the Ottawa river at Carillon, and is very well posted on the subject of the Ottawa river. In an article published in THE CANADIAN ENGINEER in August, 1897, Mr. Bell says: "At present not more than eight feet depth for navigation can be depended on between Lachine and Ottawa city, in low water." Some of the engineers giving evidence were in doubt as to nature of the bottom of the Ottawa. Mr. Bell made extensive surveys, 1870—1882, from above Grenville to below Carillon, and (by an assistant), above and below St. Ann, and he states that "the lower Ottawa flows over limestone rock." There appears then to be a very serious problem in adapting the present navigation of the Ottawa to the demands for increased depth. The report made by the Senate committee seems to show how incomplete is the information before the public, and how necessary it is that a careful examination of the whole place should be made, and preliminary surveys carried out before the government affords any assistance to the scheme, either by a money grant, or by lending its credit by a guarantee of interest per term of years, as has been proposed.

In a paper read before the Royal Society of Canada in 1893, T. C. Keefer, C.E., C.M.G., stated that: "The Ottawa route would be most valuable to Lakes Michigan and Superior ports, as affording much the shortest water route to tide-water at Montreal, and also at New York, via Lake Champlain, if the barge system of transportation proves to be the most efficient and economical. Hydraulic lifts, or pneumatic locks, may yet bring the shorter and shallower water routes into competition with the St. Lawrence; but as long as boats are kept in their native element, the broad deep channel of the St. Lawrence will remain the only one which can successfully compete with the railways."

#### FIRE-PROOF BUILDINGS.

BY FRANCIS C. MOORE.

(Concluded from last issue.)

Well-holes should be avoided if the building is to be regarded as "fire-proof." It is almost impossible to control a fire starting in the lower floors where a well-hole opens through those above. Luxfer Prisms are now used to secure light from side windows, it is claimed, with great success. A recent fire test of the Luxfer Prism, in Chicago (March, 1898), is stated to have been satisfactory to Fire Marshal Swenie, as showing that these prisms afford material protection from the heat of a neighboring fire in an exposing building, and that, to some extent, they are substitutes for iron shutters. These should be in hallways cut off from the rooms at each story by fire walls and doors, to prevent draughts. It is not so important, and is not so practicable, in the case of office and hotel buildings as in the case of mercantile and manufacturing buildings; but it is advisable, even in office buildings, to have the staircases, elevators, etc., in a separate hallway, the division walls of which should extend through and above the roof, and any skylights should be covered with glass not less than  $\frac{1}{4}$  inch thick. It is contended by some that skylights should be of thin glass, so that they will break easily and permit the escape of smoke and