

water to a depth of one inch, in a covered container. The brick shall be weighed at the following intervals: one-half hour, six hours, and forty-eight hours. Superfluous moisture to be removed before each weighing. The absorption shall be expressed in terms of the dry weight and the balance used must be accurate to five drams.

Freezing and Thawing Test.—In case the freezing and thawing test is desired, at least five bricks shall be thoroughly saturated by immersion in cold water, the temperature of the water to be raised to 200 degrees F. in thirty minutes, then allowed to cool. The specimen shall be immersed in ice water for not less than one hour, weighed, then transferred to the refrigerator and supported in such a manner that all faces will be exposed. The specimen shall be subjected to a temperature of less than 15 degrees F. for at least five hours; then removed and placed in water at a temperature of not less than 150 degrees F., nor more than 200 degrees F., for two hours. This operation shall be repeated twenty times, after which the bricks shall be again weighed, still saturated. The character of the bricks shall be noted before and during the test, and all visible changes noted. Immediately on completion of this test, samples are to be thoroughly dried and subjected to the transverse and compression tests.

Requirements.—The following requirements shall be met:—

Modulus of rupture shall be as follows:—

	Average.	Minimum
For samples thoroughly dry	400 lbs.	325 lbs
For samples thoroughly saturated ..	275 lbs.	225 lbs
For samples subjected to freezing and thawing process	275 lbs.	225 lbs.

The ultimate compression strength shall be as follows:—

	Average.	Minimum
	lbs. Sq. In.	lbs. Sq. In.
For samples thoroughly dry	3,000	2,500
For samples thoroughly saturated ..	2,500	2,000
For samples subjected to freezing and thawing process	2,500	2,000

The absorption shall not average higher than 15 per cent., and in no case shall it exceed 20 per cent.

The freezing and thawing tests shall not cause cracking or serious spalling in any of the bricks tested, nor cause the serious disintegration of the material.

Economic Minerals and Mining Industries of Canada, a 77-page illustrated pamphlet, by Mr. J. McLeish, Chief of the Division of Mineral Resources and Statistics, contains data concerning the main geographic and geologic features of the country, and a brief description of the same, treating separately each mineral and mineral product. A summary of the mineral production of each province and references to the laws governing mining and the ownership of mining lands in the various provinces, also are included. The pamphlet is issued by the Mines Branch, Department of Mines, Ottawa.

The railway-terminal problem of Chicago is to be investigated under the direction of a public commission composed of leading engineers and business men. This is to be undertaken for the reason that the council committee on railway terminals, which was forced by public agitation to order such an investigation made under its direction, is considered to be prejudiced in favor of the plans submitted by the Pennsylvania Railroad. The committee has openly advocated these plans, and has predicted that they will be approved by the city authorities, thus indicating that it will give slight consideration to other plans or to the general problem of improvement of the railway-terminal system of the city.

ROYAL COMMISSION'S SEWAGE DISPOSAL ENQUIRY.

THE Royal Commission on Sewage Disposal (Great Britain) has recently issued an appendix to its eighth report which was published last autumn.

This report dealt with the establishment of some co-relation between the chemical character of the water of rivers and streams, and the relative purity and freedom of them from nuisance. It will be remembered that the Commission expressed its opinion that the liability of a stream to become objectionable under unfavorable conditions might fairly be estimated by the amount of dissolved oxygen absorbed in five days at a constant temperature of 65° F. This it regarded as the best indication of the liability of a stream to become offensive in warm weather and that is surpassed in value as an index to the stream's conditions, the percentage of ammoniacal nitrogen present.

The Commission's conclusions defined the limits of temperature variations as 37.2° F. lowest, and 64.4° F. highest, from observations taken on a number of streams.

In the appendix, now issued, the Commission sets forth in detail the experimental work which constituted the basis of its recommendations and a great deal is contained therein of value to engineers concerned in the prevention and abatement of river pollution. "Engineering" (London), outlines the work as follows:—

In commencing their operations the Commission addressed inquiries to all the county medical officers of England and Wales, as well as to the various river conservancy boards, and from the information thus acquired, a preliminary list of fifty streams was drawn up and personally inspected. As the result of this examination, which was carried out by Mr. G. B. Kershaw, the engineer to the Commission, twenty-five places were selected for further inspection and examination, but in the end attention was mainly concentrated on sixteen of the sites thus chosen. The object of the inquiry being to correlate the chemical characteristics of the waters of a stream with its state as estimated by the eye and nose, careful note was taken of the condition of its bed and banks. Stones from the shallows were examined for algæ growth, water insects, and the like, and special attention was paid to any deposits of mud in the pools and banks. Fish life was also carefully noted, and at the same time data were taken of the relative rapidity of the streams, which were classified as follows:—

Mean current velocity.	Character of stream.
From 20 ft. per minute downwards	Sluggish to very sluggish
From 20 ft. to 40 ft. per minute	Slow
" 40 ft. to 60 ft. "	Moderate
" 60 ft. to 80 ft. "	Rapid
Over 100 ft. per minute	Very rapid

Based on these observations the Commission have been able to tabulate the features given in the accompanying table as characteristic of the relative purity of natural waterways in normal summer conditions.

The cases of pollution inquired into by the Commission covered every condition, from insignificant to distinctly bad. The relative volume of effluent to the stream in which it was discharged was in some instances as low as 1 to 2, and in others less than 1 to 1,000, but in all cases a pretty close connection was established between the results of the oxygen-absorption test and the place which would be assigned to the stream in the table, as