and the Dominion Railway Board have before them several applications as to the justness of the Bell Telephone schedule.

The question of fair telephone rates is a complex one, and in this issue of The Canadian Engineer, in a paper entitled "Is a Rational Basis Possible for Telephone Rates?" Mr. D. C. Jackson, of the Massachusetts Institute of Technology, discusses the question very fully and fairly.

The telephone franchise is so exclusive that in discussing rates and conditions it is impossible to compare it with an electric lighting or railway franchise. The value to the subscriber in a telephone system consists in the uninterrupted large connections that may be made. Under these conditions it has been possible, and in many cases it has been the policy of the telephone companies to charge the very highest rate that the customer is able to bear. In Canada we expect that in the future the decisions of the railway board will be fixed, first, on service rendered; secondly, on fair return for investment, and combined with these consideration will be given to the cost of construction and maintenance.

The postal system of Canada as a government operated institution gives universal satisfaction, and a postal system, combined with a government controlled and operated telephone system, appears to be the goal to which we are now working, and if there is one field of activity more than another which naturally falls rightfully into the domain of government control it is the telephone and telegraph systems of our country.

CLASSIFICATION OF EXCAVATED MATERIAL.

The classification of material to be excavated or excavated is frequently a matter of much contention. Many specifications have been framed to cover the different classes of material. The Contractor quotes recently a set of specifications copied from a railroad contract. In these specifications a new classification is attempted. For earth, loose rock and solid rock they are as follows:—

"All excavated materials shall be classed under three heads, namely: Earth shall include all clays, indurated or otherwise, disintegrated shale, said stone and other rock that partakes of an earthly nature, and all other materials which can be loosened by a pick or plough, one picker keeping two shovellers busy, and a railroad plough drawn by four draft animals, weighing on an average 1,000 pounds.

"Loose rock shall consist of all boulders and masses of rock, disintegrated or otherwise, whether stratified or not, that can be removed economically by the use of a pick or bar, although blasting may be resorted to in order to lessen the cost to the contractor, or hasten the progress of the work.

"Solid rock shall consist of all boulders and masses of rock, whether stratified or not, which can only be removed by blasting, and must after blasting be blockholed."

This method of classification and these specifications are a great improvement on those ordinarily used on railroad work. With these "physical tests" the contractor is much more likely to receive fair treatment than where the question of size of the particles govern the classification.

SIZE OF THE GALLON.

American manufacturers doing trade with Canada or Canadians purchasing in the United States commodities that are sold by the gallon or tanks and sprinklers, whose capacity is rated by the gallon, should bear in mind that the Canadian and American gallon are of different sizes.

The gallon in use in the United States is the old Queen Anne gallon, and is equivalent to 8.3389 pounds avoirdupois, or about 231 cubic inches. In Canada we use the English imperial gallon. This was made the standard in 1828, and contains 10.0172 pounds avoirdupois, or a little more than 277 cubic inches. It will be seen that the Canadian purchasing in the States on the American gallon will not get the capacity he expects, and the American tendering on Canadian work must be careful to estimate on the larger size.

EDITORIAL NOTE.

A very commendable movement has been initiated in Montreal, which has for its purpose the construction of the model highway from Montreal to Sherbrooke, to serve as an object lesson in the good roads campaign which the Provincial Government of Quebec is encouraging. Quebec is recognizing the importance of highway transportation, and no better method of educating the people in this can be thought of than the building of a good highway.

ENGINEERS' CLUB OF TORONTO.

(Continued from Page 648.)

means of ornamentation. A good example of Parisian extravagance in ornamental decoration of bridges is Pont Alexander III., built in 1900 for the Paris exposition. The span is 352 feet and the width of the bridge is 132 feet. The steel work is painted white, and at each approach to the bridge, columns are placed on each side 75 feet in height. Figures on the bridge are gilded and the bridge is made to appear most striking in ornamental effect.

With regard to the Swiss bridges, they may be said to be of a more rugged type, as necessitated by the nature of the country. Switzerland has some striking railway bridges in the Alps. The viaduct is used very extensively in Switzerland. The steel arch Behn bridge is a famous bridge in Switzerland. The German bridges are massive and are peculiar for their church-like architecture, a notable example being that at Cologne. The Germans favor the short arch in bridge construction.

The Dutch bridges also have the short arch, but have a break in the center, often times comprising a draw bridge. The elliptical instead of the parabolic arch is also noticeable in some cases. A fine example of massive architectural effect is shown in bridges at Amsterdam, where it is carried even to the use of enormous lamp posts on the bridges. The lift weight bridge is used in Holland and the twin draw bridge is quite extensively used.

The famous London bridge, built in 1769, cost £720,000, and it was widened in 1902 at a cost of £100,000. It is 928 feet long, 65 feet wide. The lower arches are granite. The center span is 152 feet. It is estimated that 110,000 pedes-