

work can be performed, so that instead of stating that the blocks must be thoroughly rammed, it is most important to state the relative number of pavers and rammers that shall be employed, as is stated in the following quotation from the Philadelphia specifications:—

**Number of Rammers to be Operated.**—On all granite block pavement construction the number of rammers to be operated shall be in the proportion of 1 rammer to every 2 pavers.

### SOME GENERAL PRINCIPLES OF PHYSICAL VALUATION.\*

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THE word "value" is one of the most uncertain in the dictionary of economics, and several distinct meanings are given in treatises on that subject. An object of little or no intrinsic value may have value for its possessor, but none for any one else; that is to say, its value may be entirely sentimental, and it would fetch nothing in the market. Again, an object of great intrinsic value, measured by its cost or by the cost of reproducing it, may have no value whatever in the market, because it possesses no sentimental value or no earning power; or again, an article or a property of little intrinsic value, measured by its cost or the cost of reproducing it, may have great value in the market because it has great earning power.

By the word "value" the economist usually means value in exchange; that is to say, the price which the article or property would bring as between a willing seller but one who is not forced to sell, and a willing buyer but one who is not forced to buy.

There is no sentiment about a commercial property like a railroad. The real value of such a property is measured by its earning power and by nothing else. No matter how costly or how inexpensive it may have been originally, its value in exchange will be measured by its earning power. Prospective earning power, perhaps under altered conditions, must of course be considered. Some properties, therefore, have a so-called "strategic" value, because, while they may earn nothing by themselves, they may be combined with other properties in a way to produce or enhance earnings.

If property is valued for the purposes of sale to a new owner, earning power, with the explanation above given, will therefore be the proper basis, taking account, in other words, of the uncertainties and potentialities of the future. This, however, would not be a physical value; that is to say, the value might include a large sum to represent location, good-will, patent rights or other elements which cost little or nothing, but which produce earning power.

In the case of a public utility corporation, a valuation is generally made either for the purpose of regulating capital, or for serving as a basis of rates to be charged, or for condemnation, or for purposes of taxation. For purposes of taxation or condemnation, earning power may be fairly taken into account. For purposes of fixing rates, which are themselves sources of earnings, it would clearly be reasoning in a circle to base the value upon earning power; for purposes of capitalization, earning power has clearly no direct or necessary connection; in these cases,

it is the physical value of the property which is to be determined; that is to say, the value of the various physical elements which go to make up the property.

To determine this physical value there are two, and only two, available bases:—

(1) The original cost, or original cost less depreciation, according to circumstances;

(2) The cost of reproducing the property at or about the time the valuation is made, or, the cost of reproduction new less depreciation, according to circumstances.

These two bases are entirely distinct, and should be kept so throughout the valuation; whichever basis is adopted, it must not be confused, with reference to any of the elements of value, with the other basis, otherwise, confusion will result, and the conclusion arrived at will be unintelligible. If the original cost is to be found, it must be found without the slightest reference to what any part of the property would cost if reproduced at the time the valuation is made. If the cost of reproduction is to be found, it must be found entirely without reference to what any part of the property cost originally. The result will then be either the original cost, or the cost of reproduction new, and this result can be used intelligently and with due regard to circumstances, and as to whether it is a fair measure of value. Much of the confusion with regard to the subject of valuation has arisen from combining these two methods.

The valuation of a property is generally for the purpose of ascertaining what the courts have termed "the present value" or "fair present value." Just what the present value, or the fair present value may be, is not easy to state, and probably cannot be stated. The courts, however, have frequently stated what it is not. They have again and again laid down the principle that it is not original cost. In some instances they have stated that it is not the cost of the reproduction new, but it is generally admitted, I think, that both the original cost and cost of reproduction new, and also the depreciation, depending upon circumstances, are all elements which may affect the judgment as to the "fair value."

If the problem of the Railway Inquiry Commission were to determine the first cost of the properties which we have considered, this would have been a problem for accountants and not for engineers, except, perhaps, for some engineering advice on certain pertinent matters. The properties in question, namely, the Canadian Northern System and the Grand Trunk Pacific, have, for the most part, been constructed within a comparatively few years. To determine their cost would be purely a bookkeeping proposition, to be performed by expert accountants, with the aid of sworn statements, affidavits, vouchers, etc. Some of the lines of the Canadian Northern, however, are old lines which have been taken over into the system within recent years. I do not know what records are available, but it is very possible that to determine the original cost of these properties would be impracticable.

I have assumed, therefore, and I think it is clearly evident from the above brief discussion, that the problem assigned to me, that of making an approximate physical valuation of these properties, must necessarily be that of ascertaining the cost of reproduction new of these properties, and not the first cost. In other words, it is desired to ascertain what present investment in money may fairly be said to be represented by the physical properties concerned. If certain elements of value which originally cost little or nothing, like some of the real estate, have appreciated in value; the enhanced or present

\*From report to the Royal Commission to Inquire into Railways and Transportation in Canada.