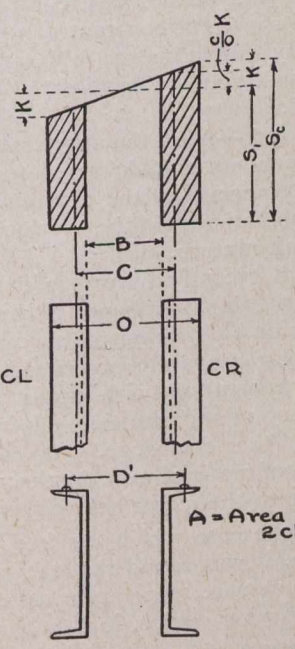
Letters to the Editor

Stresses in Lattice Bars of Channel Columns.

Sir,—In fulfilment of a promise made to you in my letter of March 14th, I enclose herewith a few notes upon Mr. Pearse's paper on "Lattice Bars," published in *The Canadian Engineer* of February 24, 1916.

(1) Fig. 3, page 274, which is intended to show the variation of stress in the two channels, is a bit misleading. The enclosed sketch gives a somewhat better idea of how the stress is distributed.



Let C represent the distance between the centre of gravity lines of the two channels, which are a distance B back to back and distance O out to out. Then the total stress due to bending in channel marked "C R" is $\frac{A}{2}\frac{C}{O}k$ instead of $2k\frac{A}{2}$

(2) The distance D' (Fig. 4) appears to represent not only the distance between rivet lines but also the distance between gravity lines and the distance between the resultant total stresses in the two channels as well.

(3) Euler's *long column* formula, Equation 7, for hinged ends, applies to columns for which the ratio $\frac{l}{r}$ is greater than 200, and is of little use for practical investigation. "Column 1," which the author uses to test the soundness of his theory, has an $\frac{l}{r}$ of 37.8, and the greatest $\frac{l}{r}$ of any column in his table (page 275) is 92.

(4) The coefficient of $\frac{l^2}{r^2}$ of Rankin's column formula, given in Equation 3, is the same as is used in the Dominion Government Specifications, 1908, for a column with one fixed end and one pin end.

(5) It may not be out of place to say that any column formula which contains the factor $\frac{l}{r}$ as a measure of the slenderness of a column should be viewed with some suspicion, for it can easily be proved, either mathematically or empirically that a rectangular column with free ends will not bend in the plane of its least dimension.

(6) The testing laboratory is the only source from which we may ever hope for the solution of the column; and any prophecy eminating from such a source should be given its just weight.

In the laboratory the loads are artificial, the conditions are ideal, and the material and fabrication are usually above the average. Such tests stand much in the same relation to the real problem as the sample packages left at the back door resemble the article produced over the counter.

(7) Since the memorable date of August 29, 1907, over a hundred monographs on compression members have been published, and the conclusions have not always been satisfying. The problem has created as much mathematical discussion as did perpetual motion a generation or more ago.

(8) The structural engineer will be greatly encouraged by Mr. Pearse's paper since it is an indication that architects in some localities at least are in sympathy with the problems of the engineer.

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Oil-Tar Creosotes.

Sir,—Referring to your editorial of December 30th, 1915, and to Dr. John S. Bates' letter in your issue of February 24th, 1916.

Dr. Bates' letter is an outline of the methods usually employed for distinguishing between coal-tar creosotes and water gas tar creosotes. These *are* the methods usually employed for this purpose, and, as a rule, are very satisfactory in determining the character of *unmixed* oils.

However, as Dr. Bates says, it is not so easy to detect *mixtures*, and, sometimes when the mixtures are made with the intention of deception, it is practically impossible to detect them. The recent introduction of tars produced in vertical retorts and at low temperatures (which are exceedingly good tars) has further complicated this matter of detecting the presence of water gas tar, since these tars sometimes contain a considerable proportion of paraffine compounds.

The whole matter, then, gets back to what the writer has maintained several times; that is, that the detection of addition of water gas oils to creosote is exceedingly difficult and requires a great deal of experience.

AMERICAN TAR PRODUCTS COMPANY,
Per E. B. Fulks, Vice-president.
Chicago, Ill., March 8th, 1916.

Through traffic over the line now being built from Petrograd to the Arctic port of Kola is now possible as far as the rail head at the south-western corner of the White Sea at Soroka, but traffic along this line will be light until it is in full working order. The Port of Soroka is not large, having had heretofore merely local fishing and lumbering importance. It has been subject to all the difficulties suffered by Archangel and caused by the ice conditions prevalent in the "neck" of the White Sea, where it opens through a strait into the Arctic Ocean. In 1913 only 45 vessels put into this port, with a tonnage of 45,389, and the departures were 71 vessels, with a tonnage of 47,061. The vessels were extremely small, many being mere barges constructed roughly to carry lumber and intended to be knocked down at the end of the voyage to other White Sea ports.