devote so much valuable time to special investigations of those and similar forms.

"Let bridge-engineers and students rather direct their attention to subjects new and of greater usefulness. Of such subjects, as in all branches of engineering, there is an ever increasing abundance."

This agrees quite well with Mr. Waddell.

On page 165, Mr. Bender states:—

"The task of the bridge-builder should not be considered ended when he has given the necessary vertical strength and stiffness to a structure. On the contrary, his problem is then only half solved. A bridge of which the vertical trusses are simplified at the expense of the scientific attachment of the floor, or by introducing eccentric and loose lateral and oblique or transverse bracing, is a more or less dangerous piece of work.

It is at the points of lateral connections where strains, arising from the rigid connections of the posts with the floor-bearers, and secondary strains arising from eccentric attachments of wind-members, are met with. These may cause moments of torsion as well as of flexure. Besides, the wind diagonals participate in the annihilation of chord strains, and their assistance may be considered in spans of some considerable length."*

"As regards the maximum wind pressures to be specified, it may be remarked that, though the frequency of hurricanes depends on the nature of the country in which a structure is located, nevertheless storms of the greatest severity in the course of time may be expected anywhere; and unless a structure is specially protected, either by mountains or by buildings, or because its axis runs in the direction of the most dangerous storms, it must be designed to meet the strongest hurricanes."

These few remarks of Mr. Bender are in confirmation of the statement made by Mr. Waddell in regard to the absolute lack of lateral bracing in our railway bridges. I am very sorry to say that the discussions have been carried solely by reference to authorities and without original contributions to our knowledge of the subject. But this cannot be avoided.

We can easily judge the value of the memoir by the favourable reviews that appeared in the technical papers, and we thank Mr. Waddell very much for the trouble of writing such a valuable treatise.

With respect, I remain Sir, yours faithfully,

A Japanese Engineer.

Tōkyō, January 22nd, 1886.

(January 7th, 1886.)

Sir,—I beg to add my contribution to the discussion of the above question in your pages.

I am an Englishman and have never been in America. I do not know any American engineers. I have seen only one bridge of American construction, and that a small one. My professional training has been under English engineers, and any bias that exists in my mind is naturally