it is not so now: more than a year ago girders over 200 feet in span were indented for from England, and they will soon be here.

Then again, he attempts to make a great point of the absence of a guard rail, that is a second metal laid alongside the one on which the train runs, on the bridges. There is a very good reason, unknown to him, but known to those whose business it is to know, for believing that in this country such a rail would cause danger and not prevent it. However, Mr. Waddell goes so far as to say, "if derailment of a train should take place as it is on, or approaching, one of the Japanese bridges, nothing could save the structure." This attempt to raise a scare fails, because the very thing he mentions happened with a carriage on March 23rd, 1884, between Suita and Osaka. No one was hurt, the permanent way was virtually uninjured, though the train passed over the Kansaki-gawa bridge, 13 spans of 100 feet girders.

So the facts are awkward for Mr. Waddell, as indeed they are all through.

If the bridges made on the English system had not been well and solidly constructed they would not have stood the wear and tear of traffic all these years, nor would they have resisted the heavy flood pressures they have been exposed to, especially this summer, without injury. There they stand, and they do their work, none the worse for it. In the face of this, it is no use for Mr. Waddell to theorise and vapour about their not standing.

He is wrongly informed about the cause of failure in the Karasugawa bridge recently. The bridge had only just been constructed, and I do not include it in what I have said above.

Mr. Waddell asserts that, if an American engineer were sent to inspect and pass judgment on a Japanese railroad truss bridge, he would condemn it before getting within a hundred yards of it. Of course he might, but if he did he would be a very silly fellow. Any man must be so regarded who commits himself to an opinion without examining what he has to report on.

Even after reading Mr. Waddell, I decline to think so hardly of American engineers.

Mr. Waddell tells us his typical man would condemn the bridge because it would blow over. A bridge that has stood ten or a dozen typhoon seasons and declines to go over, if it does not upset itself, at all events upsets the Professor's theories on the subject.

Only once, and that by accident, is Mr. Waddell amusing. One hears from him, for the first time, that Sir George Airy, who, as Mr. Waddell says, when writing about the Forth Bridge "betrayed ignorance," is a "technical authority." He is nothing of the sort. Most men of science know that Sir George Airy is not an engineer, but an astronomer. He was the English Astronomer-Royal for ever so many years. His mistake about the Forth Bridge was precisely the one which Mr. Waddell is making now; that is, he interfered in matters outside his own department and in charge of other men. He made nothing by it, neither will Mr. Waddell. But there were two excuses for Sir George, which do not apply to his imitator; one, that he was a very old man, and a good deal is conceded to age; the other, that he was, as a man of science, of world-wide fame.